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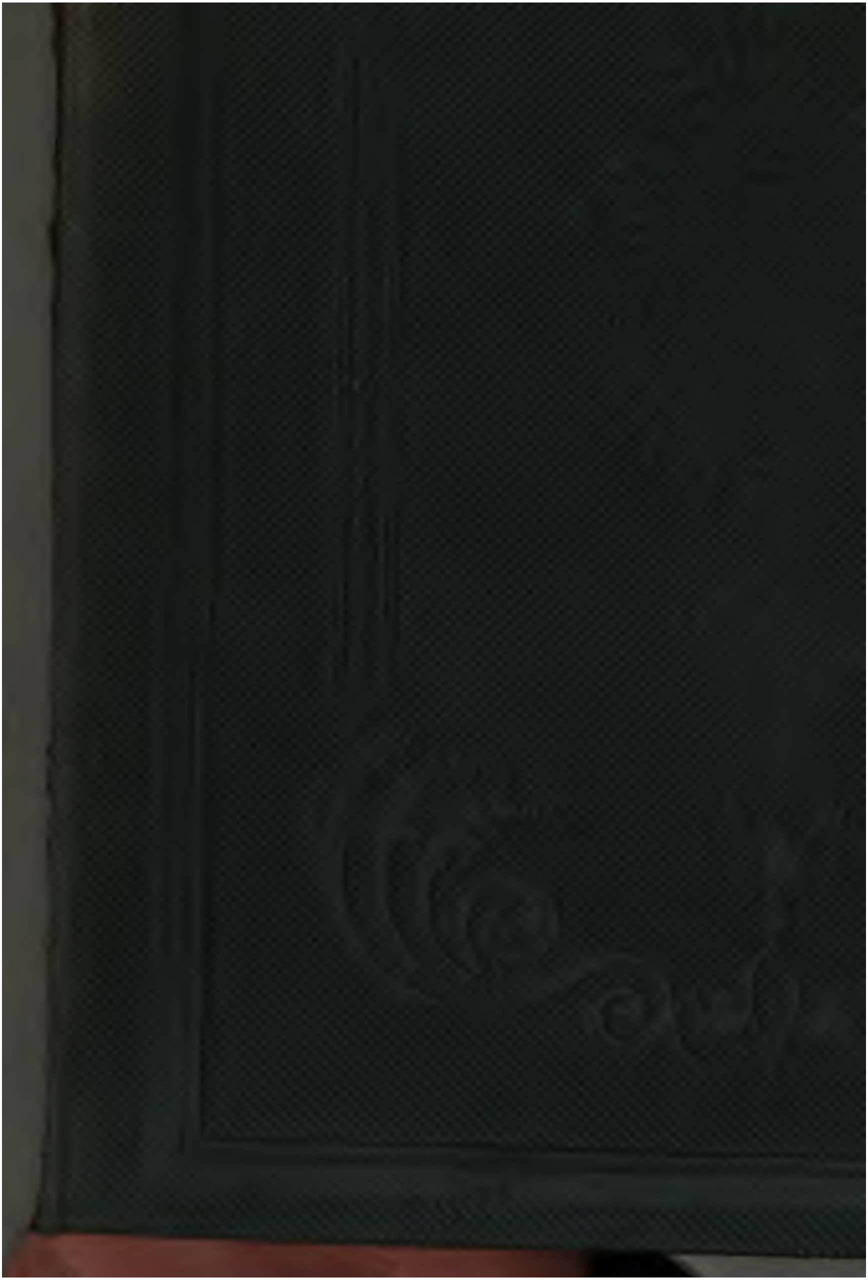


AUTHOR OF " FLOWERS AND TH
THE GARDEN, AND

L

SUTTABY AND (

CHISWICK:
D BY C. WHITTINGHAM.

aimed to offer to t
treatise on Botany.
rather to lay before hi
of the science, and to p
ple and concise a form
more regarded the instr
ment of the young, sh
dwell upon those inter
ing plants, which the
afforded; but has so
work into narrow limit
it suitable for general

It is not here nec
relative excellencies of
næan Systems. The
system of Linnæus affo
to the botanist in as

questions at the end of the
Author hopes she has spared
some trouble in explanation,
some difficulty in learning.
ts a number of terms, and
earned by rote; but the gene-
the science do not require to
o memory, as it is surely suf-
upil to understand them, with-
them verbatim. The close
the contents of the chapters,
ed by the questions, as well
l reference to the explanatory
tions, will, she trusts, be suf-
e the learner's knowledge of
are stated by the work.

l
,
;.
d
e-
to
ıf-
th-
ose
ers,
well
tory
suf-
e of

Tissue; Tubes; Cuticle....

CHAP

ROOTS:—Various Uses of Ro
Tendency of Roots to the C
Duration affected by Cli
Roots and large Leaves;
Roots; Spindle-shaped Ro
Root; Bulbous Root; Si
Changes in Form of Root;

CHAP

Of the STEM:—Its Uses; Its
port; Substances of which S
Wood; New Wood; Me
of Pith; Hollow Stems;
Stems of Flowers; Culm of
Stipe; Various Terms a
stalk; Leaf-stalk..........

CHAP

BUDS:—Season of their Form
Buds; Mixed Buds; Mea
served from Cold; Horse

erms applied to Leaves. 39

Chapter V.

; Stipule; Stipules on the Plane
ndril; Uses of Tendril; Thorns;
horn Bush; Prickle; Hair; Uses
Shape of Hairs: Gland; Pitcher
Flower; Venus's Fly Trap. 73

Chapter VI.

ous Forms; Uses of the Corolla;
nvolucre; Stamens; Pistils; Seed
Forms of Seed Vessel; Seed;
l Cotyledon; Great Proportion of
of Seeds to Man and Animals;
ds; Capsules; Berries; Seeds
rs; Receptacle; Nectary; Uses
Shapes of Nectary.................. 82

Chapter VII.

:—Spike; Raceme; Panicle;
Umbel; Umbelliferous Plants;
wers; Sheath; Catkin; Com-
te Flowers; Sessile Flowers. 115

Plane
horns;
; Uses
itcher
). 73

orolla;
; Seed
Seed;
rtion of
nimals;
Seeds
; Uses
.... 82

nicle;
lants;
Com-
owers. 115

Cr

SAP:—Flowing of Sap;
Sap; Principle of Lif
Vegetable Products; G
Bitter Principle; Narc
Acrid Principles; Acid
Matter; Wax; Cam
Ashes; Earths; Flint.

C

LOCALITIES of Plants; Ef
Productions; Plants
different Hemispheres.

CH

On the Words Genus, Sp
sulting a Flora; On Fo
Collection of Plants. ..

CHAPT

ON THE NATURE OF PLANTS FIBRE; TUBE

BOTANY, or the stu the nature and uses ner in which they may plants have not the same and cannot move from t grow, yet they are not life have, what is called veget by the soil, and are kept they increase in size; dif them, and are constantly wither, we justly say they

The vegetable kingdo

ile herbs, or herbaceous plants, are e but a short period, grow near the e formed of soft tender substances, nd most flowers.

ve discovered upwards of fifty thou-
l there are doubtless many thousands ve never been seen. Foreign plants ics. Those which grow in Great ed indigenous or wild plants. We nd between three and four thousand

e a flower, or leaf, or the stem, or a plant, we find in each of them stance. In the leaf, this substance flower it is of some gay colour; in nerally white, as in the potatoe; in *a yellowish colour,* and so on:

ear the
tances,

y thou-
usands
plants
Great
s. We
ousand

tem, or
f them
bstance
our; in
toe; in
so on:

sue, which is as abundant
It consists of vessels or tu
part of the plant. Somet
gle, but they are often u
they form the fibres, prop
pose the framework of th
strength and firmness.
are placed the sap, which
to us; others contain th
formed in the stem and
secretions; such as the
the sugar in the sugar-ca
vegetables is formed of
There are some plants
not bear flowers—as the
are formed entirely of cel

ear and easily torn; but when it is
trees, it is often thick and coarse.
id of colour, and takes its tint from
lying underneath it. It is full of
netimes see it partly torn off trees,
ow again on them, even if quite
ut if torn off from flowers and leaves,
r repaired. In flowers and fruits
ckly, it keeps pace with them, and
itself to their growth, just as the
l enlarges every year as the child
hen a plant grows suddenly very
a tree becomes hardened by age, it
It serves to protect the parts under-
s often covered with hairs. The
m, and of some other fruits, has a
on it; and the cuticle of the ice-

s tint from
is full of
off trees,
if quite
nd leaves,
nd fruits
em, and
as the
e child
y very
age, it
nder-
The
as a
ice-

WHAT does Botan
Are plants alive?
What kind of life h
Mention a point in w
Mention something
to that of animals.
What is the differe
herbaceous plant?
What is an exotic?
What are plants calle
country?
How many species of pla
How many are natives
What is the pulpy subst
Of what is it composed?

tubes hold?

y plants without them?

cuticle?

f the plant does it cover?

thin and delicate?

colour?

crack?

e substances occasionally found on plants, and endeavour to remember hose mentioned in the chapter.

FIBROUS ROOTS; SPINDLE-SH
TUBEROUS ROOT; BULBOUS
TO BUDS; CHANGES IN FORM

A PERFECT plant ma
root, the stem, the le
and some parts called the
hereafter explained. Ma
which enclose the young
formed of scales. These p
as several plants, like the
no flowers; some have
grow almost close upon t
less thistle; others, like
about the furze bushes, h
is a part always found in
or three kinds which floa

ınd on
ıember
r.

ing down in the water, several
: and some plants live for some
g roots, which afterwards descend
f the stream, and fix themselves

eful to the plant in two ways. It
firm in the earth, and it derives
il, for its nourishment. It gene-
two parts, the body and the fibre;
art only is absolutely necessary.
be found in all roots, and they
food for the plant from the earth.
ttle openings at its end, and these
alled vegetable mouths, because
rough them. By means of these
ices of the plant which are too
ried back into the soil, through

some
scend
selves

s. It
erives
gene-
fibre;
essary.
d they
earth.
these
ecause
f these
re too
rough

do not equally exhaust it
so exhausted, that the a
leave it without culture fo
which spring up die away,
mould; and frequently th
land by manuring it.

The fibres are someti
some roots they come fro
in some they arise from t
bous roots they are alwa
the lower part. Some ra
a downward direction, but
The roots of woody plant
the addition of a layer e
the root, and become lon
shoot growing out of the

come white by being kept in a rkness, however, is not the sole ence of green in the root; for if om the ground, and expose it to remains colourless, which would with any other part of a vege-

have a tendency to the centre of that of the object on which they ver way we put a seed into the it be what we might call upside t will find its way downward, and f the plant will rise into the air. ke the mistletoe, grows upon a strike towards the centre of that ver position the seed may have *hus the root* springs sideways,

ot the sole
root; for if
expose it to
which would
t of a vege-

he centre of
which they
eed into the
t call upside
ownward, and
into the air.
rows upon a
entre of that
d may have
ngs sideways,

Roots are either a
They are called ann
season, as wheat and
and as a large numb
seeds of which requir
are called biennial, w
their perfection. T
rot, have only leav
second year produc
die. Roots are pe
years in the ground
trees in general; a
the violet, and many

Some roots, which
become annual in
with the nasturtium

om the soil by their roots. Plants
on barren spots, have very small
d of these they have juicy fleshy
ibe and retain the moisture of the
erve the plant instead of a larger
hich grow on dry sandy deserts,
which we often see in the conser-
ed thus; and the carrion plant,
of deserts, is often called the
ecause, like that animal, it is so
d to the arid waste for which it

e the mistletoe, strike their roots
ther plants, and are fed by the
ables on which they grow. They
asites. The parasitic plants are
untry. *The* mistletoe is the

[illegible]
very small
juicy fleshy
sture of the
of a larger
dy deserts,
the conser-
rrion plant,
called the
mal, it is so
for which it

e their roots
fed by the
grow. They
ic plants are
letoe is the

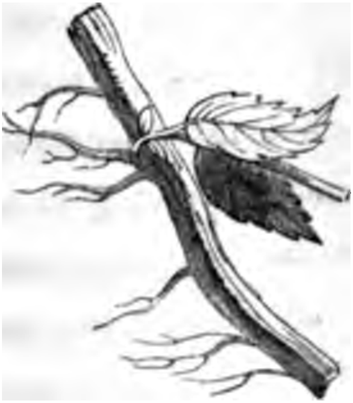
---

their substance to deri
therefore not parasites.

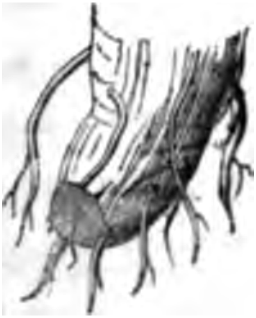
Botanists have arran
kinds, according to th
cannot be studied with
terms, the learner mu
to memory, and comp
he quite understands t

1. The fibrous ro
(*Radix fibrosa*), co
sists wholly of fibres,
most grasses. Sometin
these fibres are sim
sometimes they
branched with a num
of other fibres.

d of this.
ping root
. This is
e under-
he couch-
It creeps
ground,
stems at



; root (*Radix præmorsa*). This
pering down to
arrot or radish,
vere broken or
plantain which
ds has this kind
is a common
bious of the hedges—which has

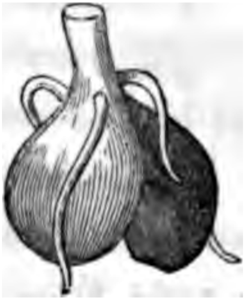


rsa). This

ich has

shaped the first year,
woody and abrupt.

5. The tuberous knobbed root (*Radix berosa).* This cons of a number of fle knobs, joined together stalks, as the potat Another kind of tuberou as in the bee-orchis; w



n the crocus ;
a number of
onion, when
tunicated ; or
like the lily.
part of this
e young future
is altogether
ground, it has
root. The fibres at the lower part
however the true root ; and some
refore called this a fibrous root,

lower part
and some
ous root,

and produces its young s
bulb is increased by mea
bulb, which grows out fr
rates itself, and springs u

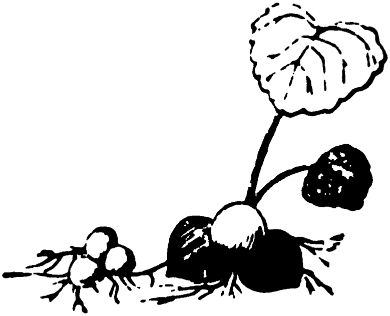
Roots which are bulb
become fibrous if planted
land offers no resistance
and they increase until
formed of them. If a tr
and grow close down to
its fibres become much mo
having bulbous roots in
totally changed in a moist
produced by a natural a
of a wonderful and ben

- -

›untry would be quite swept away by

ıulated root *(Radix granulata)*.

sists of a
nd knobs,
ch other,
string of
ıct merely
' tuberous



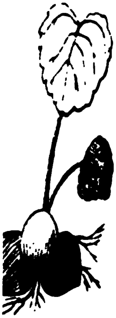
n mentioned by naturalists as a dis-
nces may be seen in the wood sorrel,
ated saxifrage.

QUESTIONS.

ı does a perfect plant consist?

ʳ *all necessary?*

granulata).



alists as a dis-

ie wood sorrel,

t consist?

How many parts has the

Which part is necessary

Of what use is the fibrou

What are the openings called, and why are they so

Do the fibres serve any that of sucking up food fro

Why does the farmer c field?

What other name have t

Are roots green in any

Is darkness the sole caus

If we wanted to make ste should we do with them?

To what does the root te in the ground?

ıl besides those mentioned in the

annual root?

ınial root?

perennial root, and in all the cases

· a root of a rose tree, a daisy, a

uckle, a major convolvulus, a French

l or perennial.

er annual in one place and perennial

ention an instance.

y plants which seem more nourished

than their roots?

of places do such plants grow?

ıse plants called which thrive on the

?

ll the cases

a daisy, a

ns, a French

d perennial

nourished

row?

e on the

ribe the fibrous ro

Describe the spindle-sh

Which part is the body

What is the creeping ro

Describe the abrupt roo

story connected with a plan

Are any plants found wh

abrupt and sometimes anoth

what circumstances? give t

Describe the tuberous ro

Describe the palmated ki

Describe the bulbous roo

What part of a bulbous

the plant?

What is formed inside th

roots ever change to fibrous ones,

are creeping and fibrous roots to

granulated root?
of root is it merely another form?
of root are the following? parsnip,
wheat, barley, bee orchis, brown
lantain, wood sorrel?

ous roots to

iother form?

ig? parsnip,

rchis, brown

Support; Substances of wh
Bark; Wood; New Wood;
Uses of Pith; Hollow Stem
Stems of Flowers; Culm of
Stipe; Various Terms app
stalk; Leaf-stalk.

We have said that w
covering in the eart
the root directs itself dow
consider that part of a pl
ward course. This is the
different kinds will be expl
called stemless, because t
part between the root and
flowers are called stemless
not what is called a true s
explained in this chapter.

ny ways. The trunk of trees supplies
and with bark for medicines and
The stalk of the sugar-cane yields
many other trunks might be men-
serviceable.

ally grow upright or nearly so, but
various forms, and are called flexible
ke that of the French bean, hop, or
wist themselves round poles, or
ants, and hold themselves up by
nd some are provided with curls or
e grape vine, or with little fibres,
small roots, as in the ivy, by
the plants support themselves,
main stems may not have much

r woody, like trees; or fleshy,

rk for medicines and
the sugar-cane yield
trunks might be me-

ht or nearly so, but
id are called flexible
ench bean, hop, or
round poles, or
emselves up by
d with curls or
h little fibres,
the ivy, by
themselves,
have much

r fleshy,

it is composed, are a
first the cuticle, or
already described. U
substance, called cellu
true bark of the tree, w
useful in tanning and d
the aromatic oil of the ci
substances.

When we remove the
stantial part of the tree,
is composed of various ves
bound together by cellula
a number of layers formin
though they are not alway
they are sometimes close
the tree. They ma

r name for it, because a new layer very year, and each year it hardens ke the other wood, and again a rmed. In consequence of this, the y be told by counting the number

ibres which go down from the top the stem, there are a number of em from the middle to the outside are called medullary rays, because e pith (medulla) in the centre, to e of the trunk. In the central is a spongy substance usually of colour. It is called the pith or be very plainly seen in the elder Sago is made from the pith of the *paper is made* from the same

ear it hardens
and again a
ice of this, the
ig the number

from the top
a number of
to the outside
rays, because
the centre, to
n the central
nce usually of
l the pith or
n in the elder
he pith of the
rom the same

at all, as it then turns int
The other kind of woo
palms and other foreign
In this the wood, the pit
the bark, cannot be sepa
distinguished, but seem al
gled together in one mass
stead of the central par
firmest in this kind of ste
the outermost parts are t

Some stems are hollow
hemlock. In these, the
substance, but is merely

The soft fleshy stems
composed chiefly of a
interspersed to give them

be seen arranged round the stem in full grown plant if the stem be clearly perceptible without the aid . Botanists divide the stems or bles into four kinds.

he true stem, is one which bears lossoms, as the trunks and branches ral, and of a great many flowers, nettle, the large white convolvulus, oundsel and many others. The e simple when no branches spring white garden lily; and branched arise from it, as in the common 's wort of the meadows. When ced on the main stem, in opposite to be dichotomous as in the mis-

e without the aid
de the stems or
ls.
one which bears
ınks and branches
eat many flowers,
white convolvulus,
ny others. The
branches spring
; and branched
n the common
dows. When
n, in opposite
; in the mis-

M

II. Culmus. The c
of grasses in general.
grass plants, often knot
The term culm is howe
some plants much like
rushes, &c. and in these
rushes, quite full of pith.
which is a grass plan
often forty feet in heigh
beauty of the landscape
building of houses, and
terial for household fur

III. Scapus. The
which bears the flower

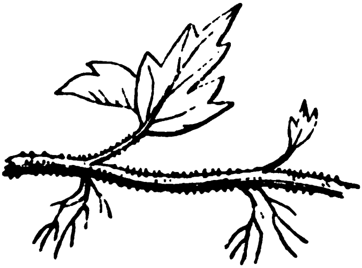
escribing flowers it is common for they are stemless, when their stalk aning that they have not the true pports leaves as well as flowers.

The stipe. This is the stalk of the d the fungus or mushroom tribe. a fern, we find it to consist of a substance, which seems merely a stalk which holds it, and which dle. On this leaf are little ridges, seed of the plant. The whole of ce, including the stipe or stalk, is The stipe in the mushroom is which supports the cap, or dome tipe in a frond is the stalk of the There are terms applied to the *to its mode of* growth, and the

ess, when their stalk
have not the true
well as flowers.
is the stalk of the
mushroom tribe.
t to consist of a
seems merely a
it, and which
re little ridges,
The whole of
e or stalk, is
ushroom is
p, or dome
talk of the
d to the
, and the

Procumbent (*pr*
ground, but not se
out fibres from the jo
as in the common
field convolvulus.

Creeping (*repens*),
sending forth roots, as



Climbing (*scandens*),
tendrils, as the sweet pea c

. Thus the
plant with
ed leaves, and small greenish
n winding about the trees, and
ge, always twines from left to right.
to set it in a garden and endeavour
er way, it would regain its natural
y its growth was unrestrained. The
o, and the large white wild convol-
urn in the opposite direction—from
d are equally true to their natural bias.
adicans), when, like the ivy, it clings
a wall or tree, by means of a number
ch do not derive food for the plant, and
iceable to it by holding it up.
(*ramosus*), when several branches come
the gooseberry bush.

Triangular (*triangular*
cactus.

Square (*quadrangular*
nettle, and nettle-leaved bel

Articulated (*articulatu*
in the samphire, which gr
the sea coast, and is use
pickle.

It is easy to see that ste
much in the roughness or s
faces, some being velvety
shining. The terms most
press these differences are l
committed to memory.

e plant.

viscidus), covered with a clammy juice, avens; a yellow wild flower sometimes bennet.

hispidus), with stiff bristles, as the rage and the viper's bugloss.

(*glaucus*), covered with a mealy sub- ething resembling the bloom on the of a sea green colour. Plants which sea side, often have their stems co- his sea green mealiness: as the sea- It easily rubs off the plant.

which issue from the main stem of a ar the flowers, are called flower stalks

The flower stalk is said to be axil- proceeds from the point formed by *leaf and stem*. It must be remem-

ered with a
low wild flower

ith stiff bristles,
viper's bugloss.
covered with a mealy
bling the bloom
en colour. Plants
ten have their stems
mealiness: as the
s off the plant.
from the main stem
s, are called flower
stalk is said to be
m the point
em. It must be

continually in use in bota
is opposite to a leaf, it is
as in the tulip, it is at
called terminal. Flowers
sometimes seated close
the main stem, without
flower stalk at all, in w
case they are termed ses
It must be remembered
the word sessile means sea
A curious instance occur

UESTIONS.

t of a plant called which springs
posite to the root?
the stem to the plant? and to

row upright?
means by which they are kept up.
inds of stem.
mes next to the cuticle in the oak

nd what does it contain?
part of the tree next the bark? and

mean by sapwood? and has it any

a

Are there any trees in
at all?

Is there any pith in holl

Describe the stem of th

Describe the stem of flo

What appearance has
plants called dog's mercur

Describe what is mear
stem," and give several
named.

Describe a culm.

Describe a scape, and

What is a pedicel?

Mention whether the
scape or a stem? nigh
anemone, polyanthus, but

g plants turn the same way?
ber of little fibres grow on a stem,
em is it called?
f stem has the tulip?
nealy substance found on plants?
nt by a flower stalk—and what
it?
xil?
wer-stalk said to be terminal?
posite?
ssile? and what is the meaning of

ce in which a flower is sessile on

alk called which holds the leaf?

)w on a ste

d on plants?

lk—and wh

erminal?

ie meaning of

· is sessile o

ls the leaf?

OF LEAVES; VEINS AND NERVE
TO PLANTS; EFFECT OF LIG
LEAVES; SLEEP OF PLANTS;
GREENS; LEAVES OF TROPI
AQUATIC PLANTS; EFFECTS O
OF LEAVES TO MAN; TERMS

IF we walk in the count
ing Spring time, we
young buds on the trees.
the buds of the elder t
hedges, and a little later,
and hawthorn or May tre
number of small green l
them. Now these buds we
upon the trees and bushes
last Summer. They can
the point between the ste

ırger, till they open fully. In some he buds are seated at first so deeply hat even if searched for, during Winter, they cannot be perceived; generally the case.

on advances, the buds burst open, oot rises out of them. Leaves or ake their appearance. Those buds nothing but leaves, like the bud the end of the twig of the garden ılled leaf-buds: those which hold ms are termed flower-buds. Leaf- longer, and more slender, than ld the flowers, as we may see by tle roundish bud on the apple tree, ıe pink apple blossom, and com- *bud which is to* supply the tree

; so deep
or, durin
perceived:

burst ope
Leaves
Those bu
e the bu
the garde
which hol
uds. Le
nder, tha
may see b
apple tree,
, and com-
ly the tre

folding over each other,
innermost part from the c
climates, where there is no s
shoots do not need this
Almighty hand which form
their several needs, has n
the Torrid Zone with bu
comes out directly from th
our climate, buds are oft
with a clammy resinous
stance, on the outer part,
clothed within, with down,
thus they resist both the d
and cold. The large bu
the horse chesnut tree is fo
early in Spring, and is a

nelted Indian

ugh, it will be seen to be

lown, which is so thick, that

from it.

necessary to plants in those

a cold season, that those trees,

been reared in a hot-house,

e sure to die, if exposed to the

ne trees are not formed of scales,

f green pieces, which open nearly

s are rarely found on the stem, but

ted on the branches of a tree.

buds have burst open, the leaves

the branches of the plant. Leaves

d on the stem or branch, as in the

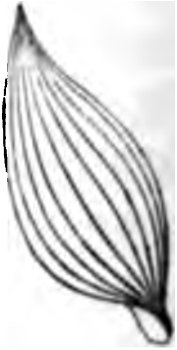
they may grow only about the root

while on the under surface,
above the green flat portic
also often covered with ha
number of small pores, whi
the vessels contained in t
like those of the iris or flag
an under surface, as they
even with the stem; both si
same colour: others, of a
alike at all parts of their su
common houseleek.

There is, in the middle
woody fibre, well known b
and this is often branched i
veins, as in the rose leaf,
form a kind of network.

resents a beautiful framework of this
ter end of Summer; and the leaves
nd other plants, are sometimes found

of some plants, as in that of the
, the portions of woody fibre, instead
oss the leaf, all go from its base to
umber of lines, even
In this case, leaves
nerved; and some-
s are easily counted,
said to be three
ved, seven nerved,

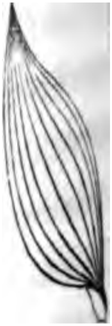


eful to the plant much in the same
are to the animal. They draw in
*they also im*bibe moisture from

ner ; and the leaves
ure sometimes found

, as in that of the
woody fibre, instead
go from its base

ven
ves
me-
ed,
ree
ed,



much in the same
l. They draw
be moisture from

countries, perspire a grea
the Summer air of our
dry, we may see this mois
of many vegetables. Th
on a dry day, early in t
clear large drops upon
pose to be dew, but whic
fluid given out by the
water often trickle dow
early day, when the
atmosphere quite dry.

The air which is give
is, in the day time, of a
scattered about a lands
very much : but in darl
a noxious quality, so th

nly means of nutrition which some
the natives of arid barren soils being
e by their succulent leaves, than by
ts. So important are leaves gene-
elfare of a plant, that if the foliage
om a tree before the fruit becomes
n drop, while green, from the bough.
see this in a gooseberry bush, which,
, has been stripped of its leaves by

eresting to remark how much leaves
r the influence of light. Thus if
n, their boughs always turn towards
as twilight commences many leaves,
lupins and clover, fold themselves
ng down till the daylight comes to
s *folding up is* called the sleep of

immediately begin to turn their leaves towards the ligh happen to bind one with i wall, the string is no sooner round to present its upper may shine upon it. This is leaves which have an upper each other; but in plants and mistletoe, both surfaces of light is not perceptible in

Leaves and stems lose th pale, if kept in darkness endive, which are blanched light. The colours of flo and the plants less vigorou have free access to them.

oses also on the approach

blossoms. If we see this flower,

onvolvulus, folded together in the

feel quite sure rain will soon be

the flowers are decaying, when

ot to be depended upon.

approaches, the foliage of trees

its colour, and to become yellow

hese changes are succeeded by the

, which leaves us but the naked

Winter trees. The fall of the leaf

its becoming withered when it has

nted time, and by some action of the

of the tree, by which it casts it off;

er season, a leaf decays, we often see

long time on its parent plant: and if

d by frost, or any other cause, we

Thus the horse chesnut tree to deck the park with its gr the Summer is quite gone it and while many trees are ye out a leaf on its branches.

There are some trees whic the Winter, and are terme are chiefly trees which co stance, like the pines and fi which have a stiff leathery holly, the laurel, and myrtl and butcher's broom of th examples of evergreens; an bramble and the young oak looking leaves on them

p in small numbers at a time, and
boughs naked. Shade is so much
e who live under a burning sun, that
ful provision of the Great Creator,
nts of such climates. The large size
of Tropical trees, is on the same
benefit. In the Torrid Zone, leaves
fourteen or fifteen feet in length;
old climates at the north of our
eden and Norway, there are forests
he leaves of which are very small
d the birch and alder, and the few
ch grow there, have small leaves,
erpowered by the snows, as larger
.

nerally all of the same shape on
and in the same kind of plant.

Shade is so
r a burning sun, th
f the Great Cre
ıates. The large
ees, is on the
Torrid Zone, lea
fteen feet in length
t the north of
ay, there are fores
hich are very
d alder, and the
have small leaves
the snows, as large

the same shape
ame kind of pla

stem, like the harebell, wh
the foot of its stem, and s
way up, upon it. The
cut into slender divisions
gradually become less divi
at the root, merely a lob
grow on mountains have
divided, and their lower
which grow in the wat
upper leaves large and
divided almost into fibre
the water ranunculus, a
on streams, in shape lik
so like a strawberry blos
call it the water strawb

uds, are sometimes
ts upon them. Thus on the oak
d especially on the leaves of the
ve may often see little balls, some-
s a pea, sometimes scarcely larger
t. If we open them we find insects
e balls are formed by the puncture
hich deposits its eggs within, and
is hatched, it becomes a fly and
out. The shaggy mossy balls which
ose trees, and which children call
ns, are formed in the same way; and
n August, will be found to contain
e galls used in manufactures are other
vegetable balls, formed by this process.
e beauty given to the landscape by the
es, and the pleasure which we derive

hem. Thus on the
ly on the leaves of
n see little balls,
netimes scarcely
en them we find
ormed by the
s its eggs within,
it becomes a fly
ggy mossy balls
which children
in the same way;
be found to
anufactures are
rmed by this
the landscape by
ure which we

Leaves, with regard to
compound. They are sai
leaf is formed of only one
leaf; though this piece m
as in the ivy or dandelion
when it is formed of a nu
leaflets on one leaf stalk,
are some simple leaves
that they might perplex t
they were simple or con
membered, as a general
do not reach the middle
simple, however much th

The terms most frequ
simple leaves, are the fol

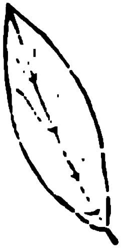
Orbicular (*orbiculatu*

.

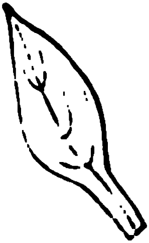
OVATE.

OBOVATE.

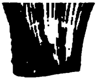
ovatum), the same shape as the
the broad part, instead of being at
is at the top, as in



r oval (*ellipticum*),
he last, but the same
ds, as in the lily of



tulatum), roundish
arrowing off.
cuneiforme), broad
e upper end, and
ards; as in one species of saxi-



WEDGE SHAPED.

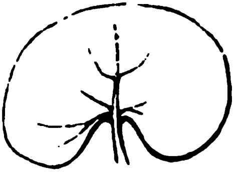
LANCE

Linear (*lineare*), a leaf much more slender, so as t the wheat and meadow gras

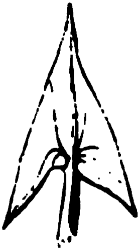
Needle shaped (*acerosu* leaf, common to some eve in the yew and the pine. having acerose leaves, ar cold climates, and if their not very small and slende of the snow, and the fury overpower them.

Triangular (*triangula* three distinct angles, as in or diamond shaped

pproaching to a square figure.



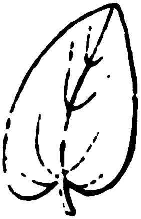
KIDNEY SHAPED.



ARROW SHAPED.

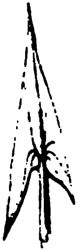
d (*reniforme*), as in ground ivy.

(*sagittatum*), triangular, and much the lower end, as in the water e streams.



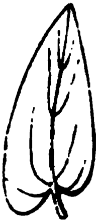
(*cordatum*), a very f leaves, similar in commonly called a ck bryony of the woods, the glossy *are very* beautiful.

uare figure.



ARROW SHAPED.

; in ground ivy,
ngular, and
as in the



very
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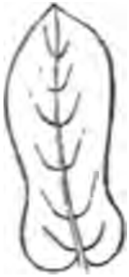
ed a
woods, the glo
tiful.



FIDDLE SHAPED.

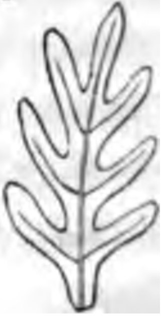
Lion toothed (*runc*
sharp divisions, pointin
mon dandelion.

Lyrate (*lyratum*), c
divisions, which are g
at the upper end of t
rounded, as in the yel
hedge.

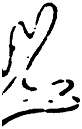
Lobed (*lobatum*),

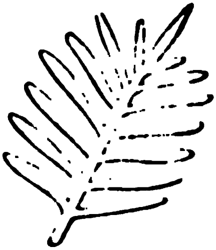
nts about
ıg a space
the hand,
on passion

nnatifidum), cut
ber of oblong seg-
common wild plant
ess.



bipinnatifidum), when these seg-
divided; as in some kinds of poppy.





other

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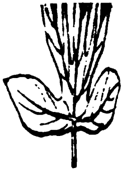
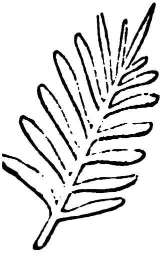
l,



n

), cut
ng seg-
d plant

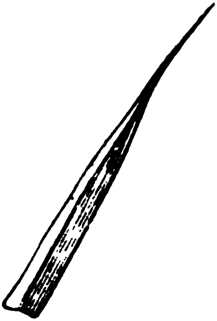
n), when these s
some kinds of pe



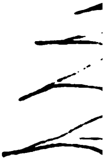
PECTINATE.

begonia.

Acuminate (*acuminatu*
point; as in some reeds.



ACUMINATE.

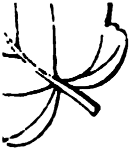


MUC

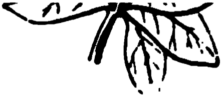
Mucronate (*mucronat*
at the top of the leaf, o
sion; as in the thistles.

Toothed (*dentatum*),
across the leaf, as in the

Ciliated (*ciliatum*), fri



CRENATED.



PLAITED.

tum), notched with roundish
ground ivy and the scarlet pot

n), when the leaves seem folded
n the common mallows.
tum), as in the St. John's wort,
of the leaves of the scarlet pim-

atum), when the back stands out
f the leaf, as in the twin flowered

d (*ensiforme*), when both sides are
af is pointed, as in the iris.

ED.

otched with rou
y and the scarle

he leaves seem
on mallows.
the St. John's w
s of the scarlet p

the back stands
in the twin flower

hen both sides
in the iris.

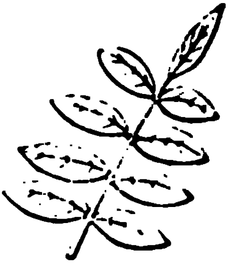
acute.

The following are the
compound leaves.

Digitate (*digitatum*), w
from the common leaf s
like rays, leaving no spac
the middle like a palmate
but each leaflet perfectly
tinct. A digitate leaf ma
composed of various num
of leaflets. Thus in the lu
and sometimes more; an
has seven. When a dig
only two leaflets, it is cal
the term yoked is often a

ne wood sorrel, and some kinds of

nnatum), this leaf might be thought to be a spray of will see by ex- at it has a main leaflets growing rose leaf, and the



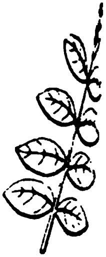
ountain ash and vetches, are pinnate imes the pinnate leaves have a sin- e top of the spray or leaf, as in the s the pinnate leaf ends in a tendril metimes it terminates without any of the main leaf stalk. When be- *there is a* smaller one down the

TERNATE.

and some kin

af might be the

of



x-

in

g

e

etches, are pin

eaves have a

or leaf, as in

ends in a ten

ates without a

alk. When

r one down

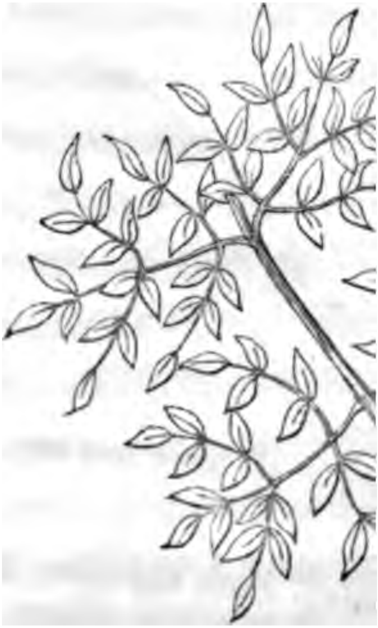
them.

Tripinnate (*tripinnatum*

pinnated. In the former

pinnate leaves on it, in this

on it.



TRIPINNAT

the root; and

ey grow on the stem. They are

ositifolia), when opposite to each

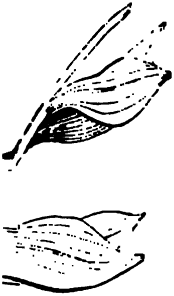
SECUND.

nda), when all hang one way; as in

mbricata), close together, like the

e stem. The

en opposite to



SECUND.

ang one way;

together, like

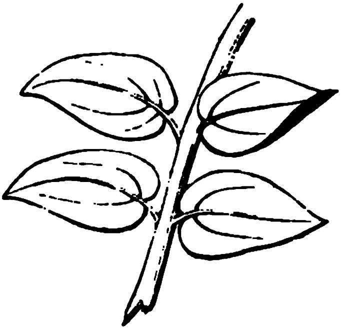
IMBRICATED.

Upright (*erecta*), all gr

upwards.

Spreading (*patentia*), fo

with the stem.



SPREADING.

Peltate (*peltatum*), whe
into the middle of the lea

CONNATUM.

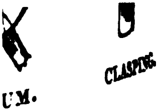
CLASPING.

onnatum), united at the base, as in f the honeysuckle.

perfoliatum), when the stalk runs af.

decurrens), running n, so as to form a ng; as in the thistles nullein.

e Latin word for leaf: thus we say *um*, a simple leaf; *folium composi*nd leaf; *folia* is the Latin word for



ited at the base,

ckle.

when the stalk

unning

form a

thistles

for leaf: thus we

leaf; folium comp

is the Latin word

At what parts of a bran

What is a leaf bud?

What is a flower bud?

Is there any difference
leaf bud and a flower bud

What is a mixed bud?

What plants have no b

Of what are buds form

Have the trees of hot c

Of what use are buds?

What have buds often
what inside?

Describe the manner i
of the horsechesnut are
early Spring.

Are buds necessary t

ɔ upper and under surface of a leaf.

.ose pores seen on the under surface

: kinds of leaf which have not upper

ɔces.

e vein of a leaf? and is it ever

erved leaf.

mean by a seven-nerved leaf?

different ways in which leaves are

,

trees and flowers imbibe moisture

upper or under surfaces?

re most, the plants of cold or of hot

, is said of the cabbage and poplar

the under

ich have not

f? and is it

-nerved leaf?

n which leaves

rs imbibe moist

surfaces?

nts of cold or of

abbage and pop

Mention the ways in whicl light.

What is meant by the ter name a tribe in which it is s

If a leaf were nailed agai surface what would it do?

Is the leaf of the mistleto by light? why?

How is a stem or leaf colour?

Mention some flowers wh hour of the day.

If we were in a meadow rain was coming on?

When do trees change c

rule as to the peri

:all.

reen tree?

aves have evergreen trees generally several instances of garden and

nts.

ies are all the trees evergreen?

of these trees never drop off?

ises of leaves to the natives of the

me evergreen trees at the north of

these large leaves? why?

generally all of one form on a plant?

common instances.

e leaves often differ at different parts

ie leaves of the harebell and musk

all

lea

a

Mention some plants with
all leaf.

Mention some of the disfig
leaves, and describe the caus

Explain the manner in whi
are produced.

Are these galls made by i

Mention the various uses

Describe a simple leaf.

Describe a compound leaf.

If a leaf is divided very
know if it is simple or comp

Repeat thoroughly the te
and compound leaves, and c
plates.

When we say leaves are
mean?

ays in which a pinnate
top.

terruptedly pinnate leaf?

which leaves are placed

ed which grow from the

d when they grow on the

ame for a simple leaf? for

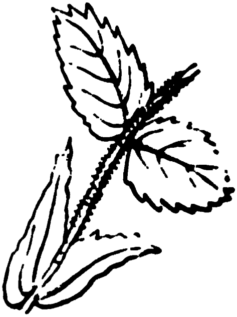
of leaf in Latin?

HAIR; USES OF HAIRS TO PL
GLAND; PITCHER PLANT; SIDE S
FLY TRAP.

WE shall now consider the
This is a comprehensive
number of different organs.
neus called the props of plan
applicable to some of them, as
very appropriate to others,
thorn. They are now genera
word Appendages. No plan
organs, and some vegetabl
them.

Stipule (*stipula*). We of
part of a leaf, just where th
from the stem, a small green

nost plants it remains as long as the ie plane tree we may see in Spring ipules forming little ruffs round the ves. As soon as the leaves become stipules fall off, and are strewn in the pathway. The very plainly seen the leaf stalk of it is often tinged rownish hue. It uble, one being the leaf stalk.



a). This is a flower leaf, performce to the blossom which the stipule leaf, and often growing so closely as to appear a calyx. It does not *the calyx does*, when the blossom may see in Sp

ittle ruffs roun

us the leaves bea

, and are stren

e

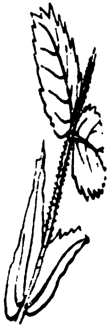
n

f

l

t

r



ower leaf, perha

n which the stip

growing so clos

calyx. It does n

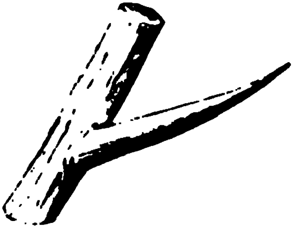
, when the bloss

tinctness.

Tendril (*cirrhus*). This which we so often see on pla support them when their ste ing to some stronger object,

y abundant and magnificent, and by
e tendrils, or by their stems winding
ey entwine the trees, and are saved
roken by the winds. The passion
s a native of these regions, has very
on its stem. The tendril is most
ed on the stem and branches; some-
he leaf of a plant, and often on the

z). The thorn is that sharp pointed
e find on the
many other
strip off the
e, the thorns
ly with it, as
f the wood of the stem. When
*ed, they be*come less thorny. The



eir stems
s, and are
ls. The p
regions, has
e tendril is
branches;
and often on;

hat sharp p

e stem. Wh
less thorny. Th

---

pointed organ; but as the p
only arises from the bark, i
easily be stripped off. It is
on the rose, the bramble, and
other plants, and is not done
by culture. In the thistles, pr
other plants, prickles are on t

Hair (*pilus*). Hairs are
the stems and leaves of plant
sionally found on every part.
covering is useful to the pla
the excess of cold and heat,
against insects. The down
leaves is picked off by coun
tinder, and in South Africa

often become quite smooth. When
ained by a microscope, they are seen
ly simple, but are, in some cases,
ked, or jointed.

ndula). This is a little substance
ie surface of the leaf or leaf stalk, on
ey are generally found. They often
imy sweet matter, as in the glands
l stem of the moss rose. The little
h cover the leaves, stems, and yellow
neadow St. John's wort, are glands.

appendages mentioned as common
bles, there are some curious ones,
nly to a few. Thus the pitcher
a native of Ceylon and Amboyna,
ed in the hothouses of this country,
pendage, shaped like a pitcher,

juice of the plant itself. The liquid is a clear water, very pleasant and refı and is from a quarter to a The people of Ceylon call tl cup, and say that when the they drink of its contents. called the side-saddle flower, l which hold a liquid of a simil is a plant which has, at the e of its leaves, a flat green pie covered with a clammy ju and set round thickly with sh teeth, which are so irrita that if an insect, attracted

SCRIBE a stipule, and give an exampl
in which it may plainly be seen.

es the stipule remain on the plant as lo
aves?

stipules generally single?

at is a bract?

es a bract fall off when the blossom ch
uit?

t ever of the same tinge as the blossom

ntion an instance in which the floral le
lifferent from the others on the plant.

at is a tendril, and of what use is it?

ere are climbing plants very abundant?

what parts of a plant are tendrils situate

hat is a thorn?

orns are much like prickles. How shall
e *from the other?*

Of what use are they to the

Mention some uses of the mankind.

When a plant is covered said to be?

Does the hair on a plant alt

How do hairs appear under

What is a gland? and give on which they are numerous.

Mention what is said about

Is the water in the pitche dew?

Mention a circumstance con saddle flower.

Describe the leaves of the

rs VARIOUS FORMS; USES OF THE COROLLA, ANTH; INVOLUCRE; STAMENS; PISTILS; VARIOUS FORMS OF SEED VESSEL; SEED; .E, AND COTYLEDON; GREAT PROPORTION OF 's USES OF SEEDS TO MAN AND ANIMALS; SEEDS; CAPSULES; BERRIES; SEEDS FEATHERS; RECEPTACLE; NECTARY; USES RIOUS SHAPES OF NECTARY.

n this chapter treat of the parts of a which the seed is formed, protected, These are called the parts of fruc- ough some plants are continued heir roots, or by means of slips and e gardener, or by bulbs, still even iginally from seed, while a large ear after year, entirely from the n the preceding season. The parts are seven, but these are not all h *every part* included under that stamen, pistil, pericarp, seed,

Corolla. The part of the pl
striking and beautiful, and w
language, call the flower, is th
corolla. This is the gay coloure
part, which is so ornamental t
the garden or the meadow, an
so full of pleasant odours in th
Summer. The sulphur-colo
primrose, the dark blue of th
pink of the apple blossom, a
corollas of these different
Each division of the blosso
leaf as the learner would call
petal. When botanists spea
variably mean the green port

en the sun dawns, and
wn ; while the common goat's
go to bed at noon," because the
ut up after that hour, and a great
rs shut up before four o'clock. A
n only in the night, as the night-
s ; and some blossoms are so frail,
tus, they open during the middle of
rop from the plant.
may be composed of one petal, or it
several. When it is of one piece
ed one-petaled (*monopetalous*), when
everal pieces, it is many-petaled (*po-*
The rose is a polypetalous corolla;
e a monopetalous one. The learner
, at first, that the primrose was com-
eral pieces, as the corolla is cut into

the common
at noon," because
that hour, and
efore four o'clock
e night, as the
blossoms are so
during the mid
plant.
sed of one petal,
en it is of one
(*monopetalous*),
is many-petaled
polypetalous cor
one. The lea
primrose was
corolla is cut

primrose, are monopetalou
piece.

It is very easily seen th
are very variously shaped
names to the most commo
following are the terms
corollas.

Cruciform (*cruciformi*
cross; as in the common
stock, as in the cut, p. 83

Rosaceous (*rosacea*), co
of from three to five pe
in the briar rose, and th
of the hawthorn or may.

Papilionaceous or b
shaped (*papilionacea*).

iges.

is called regular
e is uniform, as in the rose, wallflower.
gular, when it is not so, as in the
. the rosemary.

few corollas the shapes of which can-
under any of these definitions. They
omalous corollas. Of this kind are
, the violet, the monk's hood, the
the foxglove. The latter, although
lied to bell-shaped flowers, is not
ed, and its corolla in some respects
nger of a glove.

is serviceable to the plant, by pro-
ens and pistils from rain and dews.
some plants more remarkably than
*he bell-shap*ed flowers hang down,

part of his creat
man.

Calyx. The ca
portion which we fin
the flower, and which,
covers it altogether, as
polyanthus. This is the
calyx, but there are some
which this will not exactly
each be separately described.

The calyx is often formed
leaves or divisions, each of wh
so that when it is of many pie
flower, it is termed polysepalou
piece only, as in the mi

et open; but as
nger needs its protection, the
nuch larger than its green cup.
not any calyx, as the tulip, it

Calyxes, however, which are
l pieces, sometimes fall off at an
flower, as in the poppy, which
t, but loses it before the blossom

Calyxes composed of one piece
away till the flower withers, and
the fruit is quite ripe, as in the

very differently shaped in different
are five distinct kinds of calyx, viz:
cre, glume, calyptra, and volva.
rianthium). This kind is the true
forms a cup for the flower, and grows

close
peria
fruit
pear
the

perianth. Sometimes the per
fruit is ripe. This is the cas
pear, when we may see it on t
the form of a few withered lea
it was formerly the perianth
there is also a perianth, whic
the top of the fruit is at the
then it is the perianth of the
seen in the husk of the filber
acorn.

Some plants have a doubl
mallow.

We must here explain the
superior and inferior, as the
botany. When the germen

nvolucrum). This is a kind of green at a distance from the flower, and listinguished from a floral leaf. It rge family of plants, called the um- e, which will be explained in another be very clearly seen, in the wild een cut leaf, under the rays of stalks owers stand.

a). This kind of calyx, like the alled a cup, as it is scale, peculiar to e grass tribe; such the meadow, the e barley, &c. which

rasses. The glume is sometimes ne, sometimes of two pieces, and *an awn* upon it as in barley.

; from the
from a floral
plants, called
e explained in
arly seen, in the
nder the rays of

nd of calyx,
s it is
iar to
such
, the
which
glume is some
s of two pieces
n it as in barley.

aavance in botany, it is unne
more fully to describe them.

Immediately within the pe
the flower, we find a numbe
stances, which in some bloss
rose, are very numerous; an
speedwell, are very few. T
stances are called the stame
the flower, within the stamen
one or more slender parts, w

Both these parts may be
the lily and tulip, where the
is the pistil; and the surroun
Stamens and pistils are usuall
but there are some flowers,
as the oak, in which they

onstitute a flower in botany, although
either calyx nor a bright coloured
cases where stamens and pistils grow
ossoms, the bees carry the powder of
o the plants in which there are not
or it is sometimes carried about by
here are in the garden many flowers
een rendered double by cultivation.
se we find no traces of stamens and
he double wallflower; these parts
into petals, and contributed to the
flower. In some double blossoms,
the damask rose, we find the re-
ns and pistils, though but few are
le flowers, in consequence of being
amens and pistils, do not produce

throws out this pollen.

Pistil (*pistillum*). The pis of the flower, is composed o parts, the germen, the style a stigma. The germen is son called the ovary; in it the fruit or seed is found, *a*. Tl may be plainly seen in the p where it is a little round kno base of the stalk; and in th children call it the blue bo stalk, *b*, and the stigma is t the stalk, *c*. Sometimes th the germen, without a stal poppy.

en dry, of a substance resembling
me, like the raspberry, are pulpy;
e walnut, of a hard, thick, woody
re are usually enumerated seven
essel, which we shall explain. We
nform the learner, that when he
ical work of the fruits of plants, he
e that the word always means such
r cherries. It signifies seeds and
in general, and may mean such
le balls on the cleavers or goose
s which grow on the fir trees, or,
s enclosed in their pericarps.
a), a little chest or casket, which
splits open, and drops its seeds.
by valves, but sometimes, as in
not open at all, but drops its

raspberry, are
a hard, thick,
y enumerated
e shall expla
arner, that th
ıe fruits of pla
d always means
t signifies seeds:
nd may mean
ıe cleavers or
on the fir trees:
their pericarps
est or casket, wh
ınd drops its se
ut sometimes,
; all, but drops

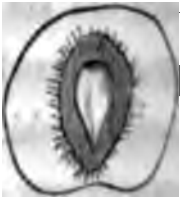
derstood, and those seed ve included in them, he may sules.

Legume (*legumen*). This valves, like a pea, with the s tached only to one edge of th There are seeds in each va they are fixed only to one seams, by which the pod ope gumes belong chiefly to the shaped flowers.

Pod (*siliqua*). This is a valves, and on opening it, besides, a thin piece. To are attached at both edges, a

n the honesty, and in this case it is
h (*silicula*). Like the long pod, it
tween the valves. The cross shaped
lflower, radish, and wild mustard have
ed vessel.

(*drupa*), a fruit of a fleshy nature
ide, as the cherry,
ut. The common
liffering from this
not having a fleshy
wever generally



(*pomum*), a fleshy
ad of containing
little casket of

pods.
nd in this
ike the long
. The cross
nd wild mustard

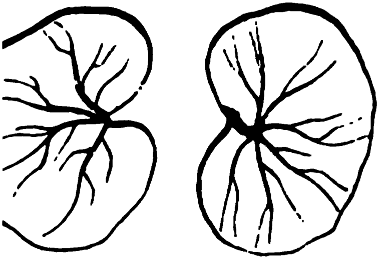
it of a fleshy
erry,
mon
this
eshy
ally

shy
ing
; of

the berry, the seeds lie in midst of the pulp. The or berries, and the mulberry, gra strawberry is what is called cause the seeds are not encl merely lie on the top of it.

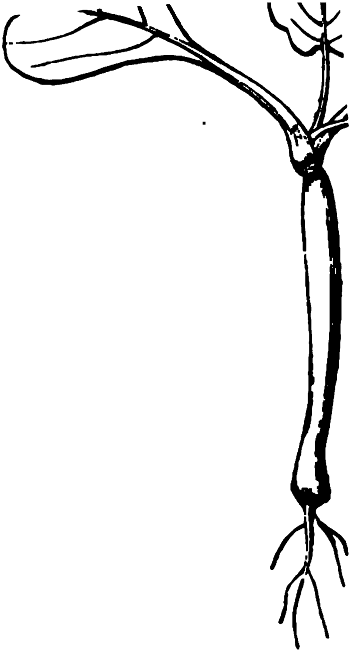
Cone (*strobilus*). This i posed of a number of hard as in the fir tree.

Seed (*semen*). The par tained in the seed vessel seed. It is of various sizes of some rather dark colour the pips in the cores of appl surface of seeds is usually itting open a garden bean we may



it has two lobes; so has a pea, but
it has only one lobe or cotyledon.
itain a flour-like substance, which
o the young plant; but when the
its root, the lobes become two
d rise out of the ground. The
are shaped differently from the
v on the plant afterwards, and are
We may see them very plainly
e bean, and in the lupins. The

es; so has a p
e lobe or coty
ke substance, t
lant; but whe
lobes become
the ground.
ifferently from
afterwards, an
them very pl
the lupins.



YOUNG RADISH, SHOWIN

If we soak an almond in
it, we shall see that it is
or lobes; and we may ofte

mals, and therefore the plants many more seeds than for their own increase. Indeed even one plant were to grow so for a few years, without single plant would soon overrun one stalk of maize, will produce ls, and a single plant of tobacco, d sixty thousand. We cannot uses of seeds as food and medi- ay remind the learner of wheat, oats, so necessary for man and fee and cocoa, and almonds and fleshy fruits, so pleasant in Sum- and cherries, and plums, and cur- grape, so useful for wine; and of *nder, and* many more, which are

and he
to dis
which
revive
and th
they
June
and

[illegible]
nany more see
own increase. I
e plant were t
a few years, t
nt would soon c
of maize, will p
ngle plant of t
ousand. We e
ls as food and
he learner of
cessary for ma
n, and almonds
so pleasant in
and plums, and
il for wine; a
ny more, which

and he does not need to be v
to discover and understand
which grace our woods and
revive with Spring. Winte
and they seem gone, but even
they sprout out again, and
June, the fields are green an
sands of flowers. Yet no g
place the seeds. All were so
God had given them of plan
will consider a few of these n
ber of the seeds of last ye
capsules, which, when dry, t
seeds fall to the earth, like
of these capsules opened w
their seeds to a distance f

while their pulp

ok root in the soil. Many

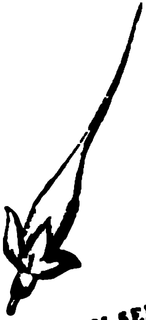
birds from place to place:

about by the winds. The

, the groundsel, and a large

e provided with a little crown

pappus), for the very purpose



GERANIUM SEED.

to float away over the face of the

nium and other seeds have a tail

y pierce the ground; and what

carried

Some s

burrs, a

clothes.

dropped

destroy

on har

Almigh

that e

supply

least

R

carried on their waves many to
Some seeds, like the burdock,
burrs, and the seeds of the cle
clothes, or to the fur of anima
dropped to the earth. Many
destroyed by heavy rains, and m
on hard pathways, yet so l
Almighty provided for their nu
that enough remained to cloth
supply the wants of living cre
beasts, and birds.

Receptacle (*receptaculum*).
be sufficient to explain this pa

It is simply the point at wh
pistils, the calyx, and indeed a
meet. If we wish to see a r

nerely a point.

ectarium). We all know that flowers
eet juice which is converted by bees
We have sucked this juice, perhaps,
ut of the clover or the dead nettle.
ying in large drops, in little cells,
wn imperial of the garden. Bees
e flowers and extract it; while the
w dust, with which we see them
these insects for what we call bee
brown substance which mingles with
e comb. But the juice is not food
butterflies and millions of insects
These insects, in their turn, are
l to the flower, for, by carring the
their wings, they take it to those
not any anthers in their corollas.

NASTURTIUM.

the flower. In the daffodil a
cup; in the crown imperial it
of cells: sometimes it is a gla
stamens. Linnæus considere
flower which could not be clas
preceding definitions, was a ne
learner may therefore consid
the present, although many b
this is not strictly correct.

nean by the parts of fruc

s produced?

rts of fructification are there?

parts are quite necessary for the

e seed?

names of the seven parts of fructifi-

e corolla, and give several instances

etal?

the word corolla mean?

e different circumstances related, res-

losing and withering of some flowers.

owers open in the night?

do we apply to a corolla formed of

tances of flowers so

y the p

uced?

ructification are the

e quite necessary

the seven parts

and give several

orolla mean?

ircumstances relat

ithering of some

the night?

to a corolla

instances of flow

Which are the wings?

What is the keel?

What is a pink-like corolla

What is a campanulate cor

What is a salver shaped ample.

What is a funnel shaped c

Describe the labiate coroll

Describe a personate corol

What is a regular corolla

When a corolla is of none do we call it?

Of what shapes are the fol stock, the yellow broom, t strawberry flower, the bria of many pieces

of one piece called?

y a naked flower?

metimes think a flower naked

x longer than the young flower?

t ways does the calyx wither?

rent kinds of calyx.

ianth.

anth of the fruit?

yx said to be superior?

ferior?

mean when we say a fruit is

nts a double perianth?

volucre?

---

ame

hich

Wh

the d

tame

Wh

Of

W

W

W

(

W

which they are not so found?

When stamens and pistils the dust carried to those in stamens?

What is said about double f

Of how many parts does a

What is the filament?

What is the anther?

What is the pollen?

Of what parts does a pistil

What is the germen and called?

What is the style?

What is the stigma?

Has the pistil always a sty

capsule.

capsule generally open, and is there

r ?

bstance is it, when ripe, and what is

efore ripening?

legume, and say to what kind of

ngs.

pod.

ouch?

arity is there in the pod and pouch

shes them from the legume?

ne fruit? and give an example.

me? and name one.

erry, and state in what it differs

l a drupe.

ry a true berry? Is the orange?

Mention some seeds with
some that have one only.

Of what substance do the

When the seed has struck i
of the cotyledons?

Mention some plants in
leaves are plainly seen, and
the almond.

Why have plants so many

Mention the instances giv
abundant seeds.

Mention the uses of sever

Mention the ways in w
their seeds.

What is said respecting

Do birds and winds assi

ee it?

ce is contained in flowers?

honey of the pollen?

l to other insects besides bees?

re insects useful to flowers?

e of the various shapes of the

ectary has the narcissus?

CYME; HEAD OF FLOWERS; SHEAT
FLOWERS; LIGULATE FLOWERS; S

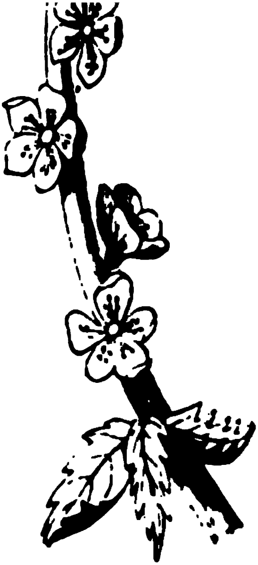
EVERY one must see that
arranged upon their ste
grows upon the summit of its
the lilac and the wallflower gr

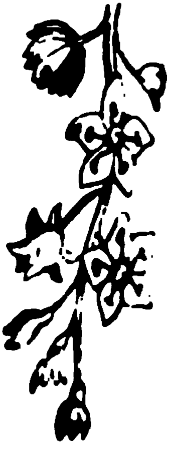
The manner in which flow
their stems is called their mod
florescence. The learner mu
derstand the few terms which
botany, because, when botan
they generally use its mode of
to distinguish it. When a f
daisy, at the top of its stalk
minal; when it grows betwe
the leaf, it is axillary.

:s so very
n scarcely
lavender,
e plantain,
for birds,
ıgrimony of

mus). A ra-
ıing like a
at as each
/ a little stalk of
s a looser cluster.
often hangs down,
ɔurnum, and the
currant tree.

ıicula). When the
eated upon long
r stalks, which are





RACEME.

ely
er,
in,
ds,
of

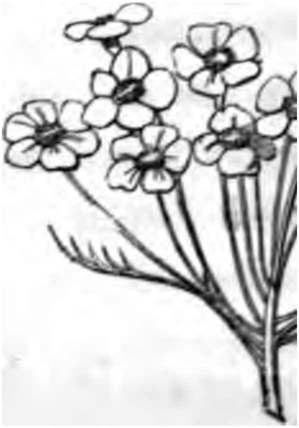
a-
a
h
lk of
uster.
down,
the

n the
long
are

together, and form an oval shape, as in the lilac, it is called a thyrsu bunch.

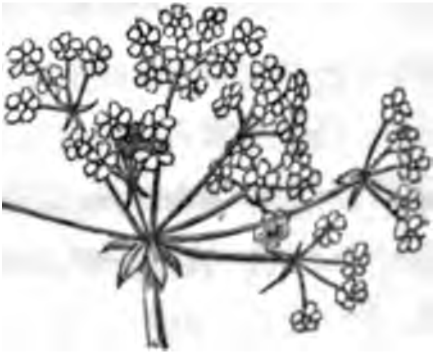
Whorl (*verticillus*). Whe flowers grow in a ring, or n so, round the stem, as in the dead nettle and many othe

Corymb (*corymbus*). Wh



call old
is a co-
, corymb
rowded,
-william,
cicle.

ella). An umbel is that kind of
the main stem terminates in a num-
proceeding from the same point,

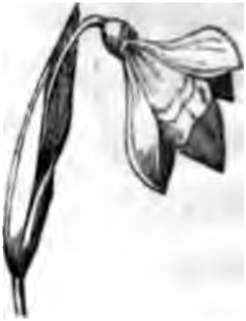


the same length, like the spokes

form a very distinct tribe. Th plants whose flowers bear con they are much alike in appe properties. A great many ha soms, and are very plentiful in and Summer. The small gree seen at the base of the bundle c by botanists a sort of calyx, a mentioned as the involucre.

Cyme (*cyma*). A cyme is much like an umbel, because its rays all proceed from one point of the main stem; but on the rays

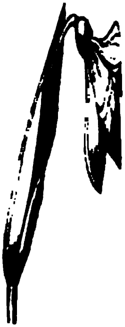
cle, so as to form a round ball,
common clover.



SHEATH.

eath or spathe (*spatha*), is a kind
on a stem, and enfolding one or
; may be plainly seen in the snow-
e narcissus. In a common plant
er hedges, the arum, or lords and
call it, the spathe is seen enve-

clover.



SHEATH.

he (*spatha*), is

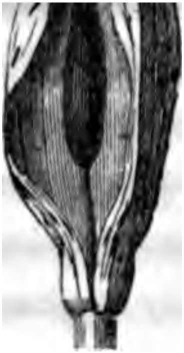
and enfolding

ly seen in the

In a common

arum, or lords

is seen



SPADIX.

Catkin (*amentum*). Thi
which are situated a numbe
scale is found stamens or p
the scales hold stamens o
pistils. The brown droopi
the hazel, and are called
are catkins ; and so are th
on the willows, which child

any other part.
re describe what is meant by a com-

l flower, although it appears but a
in fact an assemblage of flowers,
Look at the daisy, there we have in
in one blossom, nearly two hundred
orets. The outer part of the daisy,
ls which surround it are the rays.
re is the disk. Each of these rays,
ellow piece, in the disk, is a sepa-
floret. All florets of compound
ntain stamens or pistils, or both.
flowers, as the dandelion, are
f rays, and are called ligulate:
ommon thistle, have their florets
daisy includes both kinds, the

what is meant by

hough it appears
assemblage of
daisy, there are
m, nearly two
uter part of the
ound it are the
Each of these
the disk, is
orets of comp
or pistils, or
the dandelion
re called lig
have their
both kinds

In addition to th
are some plants in
seated on the leaf, as
there are some exoti
out of the trunk of
their own.

QU

WHAT do we mean
What is the
When is a flower
Describe a spike
What is a raceme?
Is a raceme always
What is a panicle?

;he smaller stalks which hol

from one point, like the spoke

; is it?

ıbel a more regular appearance t

difference between a simple

el? and give examples.

ıbelliferous plants?

ur are their blossoms generall

leaf which grows under the um

me?

egular appearance which an

ad of flowers, and give an ex

the? and give an instance.

dix?

kin.

OF PLANTS :—SYSTEM OF
ND GARDEN FLOWERS; NA
SES AND ORDERS.

art of Botany is that whi
manner in which plants
s or classes. This is called
ion. To one unused to scien
tle importance to know in wh
y be arranged, or to ascert
was in the first or second cla
bles were classed, we could
f a few of them, and it woul
knowledge of them all. With
upon the use of system, in
mber of objects to order, and
ion ; and without enlarging on
means of arrangement, we

ıg —

wer of the garden
traces of stamen or pistil, these
to the numerous yellow brown
e the flower so much more valued
t is in the fields and woods that
t study plants, and arrange them
es; and when he has done so, for
ne will be surprised to see in how
e can tell directly he looks at a
t class it belongs: for, very often
a class are so similar to each other,
not pause to count the stamens and

ean classes are twenty-four in number.
mes must be committed to memory.
according to the num-

7. Hep
8. Oct
9. En
10. I
11. I
stamen
12

8. Octandria; eight stamens

9. Enneandria; nine stame

10. Decandria; ten stamen

11. Dodecandria; eleven t
stamens.

12. Icosandria; twenty sta
ing out of the calyx; as the a
rose.

13. Polyandria; twenty sta
dred, growing from the recept
the last class, on the calyx: the
are examples.

14. Didynamia; four stame
short. The great number o
are either labiate like the thy

; stamens either
ing by their filaments or stalks
mallow.
when the filaments or stalks of
nited like the last, only into two
. Almost all the flowers in this
-shaped.
ia; filaments united in several
as in the yellow St. John's wort.
a; anthers united so as to form a
nt seem difficult to the learner, but
e flowers distinguishes this class
compound flowers, like the daisy,
elion, &c.
ia; stamens, instead of having their
heir own, growing out of the pistil:
tribe.

only, ar
24. (
others.
becaus
the fer
or mus
The
teen, f
remain
plaine
memo
Mo
Di
Tr
Te
Pe

only, and some have both on

24. Cryptogamia; this las others. It is not arranged up because these cannot be seen the ferns, mosses, liverworts, or mushroom tribe.

The Orders of these classe teen, founded on the numbe remainder, upon circumstan plained. Their names sho memory.

Monogynia; one pistil.
Digynia; two pistils.
Trigynia; three pistils.
Tetragynia; four pistils.
Pentagynia; five pistils.

a ; about twelve pistils.
many pistils.
nth class has two orders, founded, not
of pistils, but on other circumstances.
ynamia, has two short and two long
flowers are almost all labiate, or
dead-nettle or the snapdragon. The
ymnospermia ; it has four seeds, not
eed vessel, but lying at the bottom
he flowers are in this order shaped
ttle.
rder of the fourteenth class is An-
s easily known from the first order.
contained in a seed vessel; the
d like the snapdragon.
lass has two orders, and these are
ed. *It* will be remembered that

velve pistils

ls.

as two orders

ut on other

as two short and

are almost all

le or the snapdragon

nia ; it has four

, but lying at the

s are in this order

e fourteenth class

nown from the first

d in a seed vessel

snapdragon.

wo orders, and the

will be remembered

has a short heart-shaped p

The second order is te known by its fruit, which i wallflower and stock.

The orders of the three n Diadelphia, and Polyadelpl number of their stamens. stamens of these three cla what class they are ; the to distinguish the orders, stamen, we say they are o of the second ; and so on.

The orders of the larg marked by peculiarities wl to the young student. It should attempt committin ttle flowers, all grow

us follows:
equalis. When all the florets
e of the flower, and in the rays
t, have both stamen and pistil: as

superflua. The florets of the ray
il, and the florets in the centre with
stamens; as in the tansy.
ia frustranea. Florets of the centre
mens and pistils; but the florets of
out any pistil; as in the corn blue

mia necessaria. Florets of the centre
tamens; florets of the ray with only
e garden marigold.

ws :

When all th

flower, and in

th stamen and p

The florets o

rets in the o

in the tansy.

Florets of th

; but the

s in the o

orets of th

he ray

are ter

and so on.

The twenty-third class,

1. Monœcia. Flowers

or flowers that have pistil

but always on one plant.

2. Diœcia. Flowers so

The twenty-fourth class,

no visible flowers, is arrang

ferns, mosses, liverworts, f

QUESTI

[illegible] more ways [illegible]

[illegible]

ance of change effected by culture.

ames of classes as far as the eleventh.

twelfth class?

pect do the twelfth and thirteenth and show it by comparing the ex-

distinction of the fourteenth class, ›u know its flowers without counting

fifteenth class, and of what shape rs contained in it?

ʒixteenth class, and, if possible, ex- ›le given.

seventeenth class, and examine a ɔurnum, or broom flower, or any

eighteenth class, and mention the

chang

classes as far as the

class?

the twelfth and th

w it by compari

n of the fourteen

s flowers without

lass, and of wh

d in it?

ass, and, if possib

class, and ex

broom flower, &

ass, and mentio

Describe the twen

On what circums
first thirteen classes

Repeat the name

How many order

Describe the first
of flowers it contain

Describe the sec
it differs from the
examples of each.

Mention the nan
teenth class.

What is the pec

How do you kn

How are the or
seventeenth, and

he florets of a compound flower are , having both stamens and pistils, in he flower?

lorets of the ray have pistils, and he centre have stamens, what order

r is the globe thistle? and why?

distinguish the orders of the classes noecia, and Dioecia?

class Dioecia, it has five stamens, it?

reenish white flower which trails d has large rough leaves, shaped grape vine and tendrils. It is ›ryony. It is in class Monoecia. *ıens or* (rather anthers as they ompound

amens and

ay have

stamens, wh

histle? and

orders of the

ecia?

it has five

flower which

igh leaves,

d tendrils

n class Mon

anthers

RKS ON THE CLASSES AND ORDERS; FERNS;
S; FLAGS; LICHENS; SEA-WEEDS.

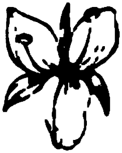
n of this little work is to direct the o the practical study of botany, the ated in this list are chiefly wild plants, rden flowers, which the young learner ocure for examination. The nume- hich might be mentioned are left vanced study of the science.

nandria, one stamen. This is a very ants: it contains two orders, Digynia. Only two native in it. The glasswort (*sali-* y plant, with jointed stems, some- mphire, is common on salt marshes. flowers without any leaves. It is *because* it yields a quantity of

nia, and Trigynia. In it are t
vet, a bush which grows in l
and has in Spring clusters of
and the numerous blue speedw
fields and meadows in Spring a
are eighteen species of the
them very common: they are
blue. The most common kin
children the blue cat's eye. T
speedwell (*veronica chamædry*
in May. Some of the speedv
and ditches. One kind is wel
of brooklime.

In this class, also, are the
a plant found in streams, a
have been used by gipsies

ss.
dria, three stamens. It has three
ıogynia, Digynia,
his class includes
are very numerous,
derable patience in



the grass plants are wholesome.
common darnel. This plant, if
eat in bread, produces delirium.
s of great use to man and animals.
the wheat and barley, furnish us
the green grass of the meadows
ts, are constantly required by cattle.
if examined separately, are very
ially during the season of bloom:
covering they afford to the earth
us motion which the latter species

---

lengt
grass
betw
calle
thou
valv
or a
with
the
hang
S
as
con
her
rud
ia

grasses, the student is at first
between calyx and corolla. T
called a glume, is usually comp
though sometimes of one, or of
valves are often terminated wi
or awns. The corolla is a
within the glume, and when the
the three stamens and two pist
hanging from it.

Several beautiful garden pla
as the crocus, the iris, and t
corn-flag. Very few of our nat
here. Among them is the re
rubra), which grows wild on ol
planted in gardens, where it

s, wh
common in corn fields.
 corn sallad or lamb's lettuce
plant of this class. It has small
of pale blue flowers, and grows
. The wild crocus, the purple and
d some plants of the rush kind,
flower called trichomena, which is
some chickweeds, comprehend all
flowers of Triandria.

etrandria, four stamens. Three orders,
ia, Digynia, and Tetra-
e again we find many
wild flowers, though this
rge class, when compared with some

he teasel, a tall plant, about four or five
is one of them. It has an oval-shaped
flowers, and these, upon withering,

the road side for birds, are w
are also a number of plants with
ing in whorls around their stem
panicles of small white or yello
at the top or on the sides of the
is wheel-shaped, and four cle
white and yellow bed straws, so
used to strew on the ground fo
der, used for dying, has also wl
similar shaped flower; and so
and fragrant plant, the sweet
very common in woods, its pa
blossoms is small, but they rem
jasmine flowers, and its leaves,
one above another on its stem

ria, five stamens.
gynia, Digynia,
, Pentagynia, and
ants contained in

too numerous to
ly can be enumerated. Here
ose and cowslip (*primula*), the
e trailing periwinkle (*vinca*),
(*anagallis*), or poor man's wea-
shuts up its blossom before rain
s and bell shaped flowers are
ding the slender harebell of the
rge Canterbury bell. A number
ved plants belong to Pentandria
go), which grows on waste ground.
oss (*echium*), whose stem of bell-
s conspicuous on the chalky hills.

of scorpion grass, which are also
one of which, the water scorpio
palustris), is the forget-me-not.
nightshade, and the dark purpl
species might warn us of their
the potatoe, which is a plant of t
has a flower shaped like that
nightshade, is here also; and lik
poisonous berries on its branch
is so useful for food. The tall m
with its yellow spike of flowers
flannel-like leaves; the winding
cera); the stately elm tree (*ulmu*
rose (*viburnum*), commonly kn
name of wayfaring tree; the
with its powerful odour, and

plants, as was before mentioned, are
ave compound umbels. Look at a
ers or berries of the ivy. You will
of stalks, all coming from one point
This is a simple umbel. Look at
re you see the stalks coming all out
of an umbrella, but each stalk has
of rays at its top. This is a com-
nd here we have an umbelliferous
umbelliferous plants grow in dry
often wholesome and aromatic.
h grow on marshy grounds are
s. Many of them, as the hemlock
, are used in medicine; and many
nd parsnip, are valuable as food
hite or yellow flowers, and are
arly in the Spring.

soon gather some instances fror
pretty lily of the valley (*convalla*
loves the shade of the quiet wo
cinth (*hyacinthus nonscriptus*)
there soon after the violet has m
and the daffodil (*narcissus*), whi
says, " comes before the swallo
liar examples. Then we find i
drop (*galanthus nivalis*), the
asparagus, and onion, and sever
plants ; and the barberry tree, w
which make so pleasant a prese

Several rushes are found in t
and a flower called the water pl
tago), is very conspicuous on st
rose-coloured petals, its leaves

ers, who employ it in making cheese
's milk.

Heptandria, seven stamens. Orders
ogynia, Digynia, Tetra-
tagynia. This is a very
he only wild plant it
inter-green (*trientalis*), a favourite
nnæus, but very rare in England
t horse chesnut tree (*æsculus hip-*
placed here. This tree is often
, on account of its beautiful foliage
rs of delicate pink flowers. Its
steeped in hot water, will serve
o cleanse linen.

ctandria, eight sta-
ur, viz. Monogynia,
and Tetragynia.

seven sta
nia, Tetr
is is a very
d plant i
(trientalis), i
ery rare i
ut tree (
This tree i
f its beauti
, pink flow
ot water,
n.
ht sta-
gynia,
gynia.

exotic heaths, which we see in
brought from the Cape of Go
class we have the singular herb
folia), a plant which may be d
if the learner meet with it in
recognize it. It has a calyx of
corolla of four petals, and fou
Very early in Spring, sometime
of February, we find in woods a
called the gloryless (*adoxa*
has, in the evening, a scent o
is the maple or sycamore tree
herb (*epilobium*), the evening
and the mezereon which, in F
with its pale pink blossoms, wit

hsia coccinea) is now so common.
e window can boast of it as an orna-

neandria, nine stamens. This small
hree orders, viz. Mono-
, and Hexagynia. The
e exotic placed in it is
e (*laurus cinnamomum*),
ch produces the well known spice
only wild flower in the class is
ush (*butomus umbellatus*), which
, and has sharp sedge-like leaves
he mouths of cattle who drink the
rs are very handsome, growing in
of a rose colour.

ndria, ten stamens. Orders five.
Digynia, Trigynia, Pentagynia

And these are in the tenth cl exotics, however, as the whole n papilionaceous blossoms belong delphia. Those of the class D mental flowers of the garden o are chiefly natives of the Cape

Some very pretty wild flow class. The pink (*dianthus*), o which is called the castle pink, walls; and another handsome pink, blooms on limestone rock and is very handsome. One Deptford pink, is found in mea the maiden pink, grows in hedg that handsome tribe of flowers of them, well known by the na

in gardens. In this class also is
pion or catchfly (*silene*). Several
plant are common. The bladder
e *inflata*) must be known to the
oms in May, and has white flowers
a calyx, which is swelled like a
ined with a fine network. Children
d. The young shoots have the
r of green peas, and, when blanched
atly resemble that vegetable. Very
arance to these plants are the
e kind (*lychnis dioica*) is known
ame of bachelor's buttons, and is
nmon in meadows and by streams.
frequent in corn fields, is delight-
he evening.

are the chickweeds (*stellaria*).

are also placed here. Here,
tree (*arbutus unedo*), which gr
its strawberries on the banks
the pretty delicate wood sorrel
which has white flowers with
leaves shaped like those of the
powerful acid.

Class XI. Dodecandria, from
stamens. Orders six, viz. Mo
Digynia, Trigynia, Tetragyni
gynia, and Dodecagynia. This
tains more exotics than native
The sweet mignionette (*reseda*
darling," is here; it is a nati
one knows the wild mignionett
It is used in dying, and often

nchanted plant, and
rom the injury of lightning.
ria, twenty or more stamens
Orders three,
entagynia, and
he place of in-
ens distinguishes
next; and is a point of great
se in all plants in which the
of the calyx the fruit is whole-
amens so situated are more than
er, the plant is in Icosandria.
the myrtle (*myrtus*), the cactus
autiful syringa of the garden (phi
ose leaves have a strong odour of
peach (*amygdalus persica*), the

damask roses of the garden, bu the dog rose of the hedges. T numerous stamens growing out form the characteristic of this also in the hawthorn or May bu is so beautiful with its white f Spring; and in the white stra*garia vesca*), which comes wi Spring woods. Like it too, pear (*pyrus*), the crab apple the origin of the cultivated fru tree (*prunus*), whose little bl sought by the schoolboy in the the origin of the delicious fru

rea), with its gracefu
y the stream side, and emitting
ce: and the pretty velvet-like
the cinquefoils (*potentilla*), which
rawberry-shaped leaves over the
ral way side.
olyandria, from twenty to many
s, placed on the recep-
seven, viz. Monogynia,
nia, Tetragynia, Penta-
nia, and Polygynia. The
lass are very different from those of
y are many of them poisonous, and
picious quality. The poppy (*papaver*.
instance; there we find, perhaps, a
s, growing all round a pistil, in
opium, that dru

stream side,
d the pretty
refoils (
-shaped leaves
side.
, from twenty
on the recep-
, Monogynia,
ynia, Penta-
gynia. The
different from
of them poison
. The poppy (
re we find,
all round a
The opium, the

yellow water lily (*nuphar lute*
common than the white flower
(*pæonia*), the larkspur (*delph*
(*aquilegia*), and many others;
poison the purple monkshood (*a*
often gather this flower, and
pistils, which they call Venus
highly dangerous to do so, a
plant produces head-ache, and
convulsions. The crowfoots
species of which are the Spring
tercups, so pleasing to children
andria.

Class XIV. Didynamia, fou
and two short. Orders two.

the lavender (
ich is so fragrant on the
the ground ivy (*glechoma*
avour to ale instead of hops:
m), which blossom in Spring.
others red flowers; the hore-
h its mouldy scent, and dull
s; the cat-mint (*nepeta cataria*.
lour, and several other common

der Angiospermia, has its seeds
ere we find the snapdragon (a
stately foxglove or lady's finger
useful in medicine; the toadflax
its yellow blossoms, and sea-gree
adorning every field and hedge:
the monkey flower of the gard

shepherd's purse (*thlaspi burs*
children call pick-pocket, is a
Here too we have the candy tuf
sometimes found wild, and who
tufts of flowers are common in ga
(*lunaria*), sometimes from its r
pods called satin flower; somet
wort, from its crescent-shaped
plant of this order.

The second order, Siliquosa,
long pod. Here we find the wall
either adorning the wall, or
bed; and the stock (*matthiola*),
of scented flowers, known t
cuckoo flower or cardamine (*c*

of Tetradynamia are all wholesome. antiscorbutic property, though many to be agreeable. The horseradish, cabbage, the sea kale, and others, table vegetables. Not one tree is ass.

Monadelphia, filaments united into seven, formed from f the stamens, viz. tandria, Heptandria, andria, Dodecandria,

The only wild plants in this class s (*malva*), and cranesbills or gera- *i*). The numerous geraniums which or lilac flowers among the grass are ere is the Robert's leaved cranesb *iana*), familiarly called pink cat the south of England; and

(*althæa*), which is of a very m

and much used medicinally.

kind is well known to children

way side, and having round flat

call cheeses. This is the malv

handsome garden flowers are

cially the scarlet and other ti

geraniums. The Latin name o

pelargonium. They are all n

of Good Hope. Here too we

(*althæa rosea*), a native of C

and several other.

Class XVII. Diadelphia,

in two sets. Orders four, viz.

variou
ile the tares, the
rs, yield food for cattle. A few
of this large class are deleterious.
arden we have the gay laburnum
m), the seeds of which are emetic:
lathyrus odorata), the yellow coro-
y others. The heath lands are bright
rs of the golden broom (*genista*), and
olden furze (*ulex*), which is seldom
n; and the purple and white clover
while the crimson and blue vetches
yellow vetchlings (*lathyrus*), tangle
heir tendrils in hedges and woods, and

s.
VIII. Polyadelphia, fila-
d in three or more sets.
Dode-

which are common in gardens
many as eleven wild species. In
it is usual to hang up the com
(*hypericum perforatum*), in the
on St. John's day. This is
saint, and avert evil spirits
Many superstitious practices p
tinent in connection with this
days they were as prevalent i
This species of St. John's w
"balm of the warrior's wound,"
by country people as a very ef
wounds and bruises.

Class XIX. Syngenesia, an
tube. Flowers all compound. C
names see preceding chapter).

; and our first fav

the daisy (*bellis perennis*), are
too we have the bright succory
), with its large blue stars, crowd-
n; and the numerous hawk weeds
ich are something like small dan-
arigold (*calendula*), that goes w
n; the numerous thistles, the tansy,
the dahlia, and a hundred others.

Gynandria, stamens placed upon
ermen. Orders four, viz.
Diandria, Hexandria, and

This class contains the
of orchises, and also the
flowers resembling insects.

-ne daisy (

ɔo we have the

ith its large blue

d the numerous

something like a

(*calendula*), that

nerous thistles,

and a hundred

, stamens

rs four, viz.

ndria, and

ntains the

d also the

rs resembling

se plants,

creation;

with expanded wings

or purple lizards of

orchis and ophrys pla

tion in woods and o

June.

Class XXI. Mono

different flowers, but gr

plant. Orders eight,

Diandria, Triandria, T

andria, and Monadelphia

In this class we find

tree (*artocarpus*), which

South Sea Islands with th

fruit of which is as large a

less nourishing.

ul ornament of shrubberies and pale silver-coloured bark, and its light, that they wave with every n compared to "dishevelled hair." *orbia)*, which is called wart weed, n its stem and branches is used ell known. There are fourteen

iœcia, stamens and pistils in l on different plants.

Monandria, Dian-
trandria, Pentan-
lyandria, and Mo-

the last, we have a number of poplar (*populus*), the willow y foliage, and the dark yew

with which for so many cent
been decked, and which is cele
been regarded by the Druids wit
and for having been called by
considered, in dark ages, a univ
of every kind.

Class XXIII. Polygamia, fl
the same plant. Orders two,
nœcia, and Diœcia. One n
plant only is found in this
This is the orache (*atriplex*).
veral species of this grow on
thick sea-green coloured leave
reddish spikes of flowers. So
weeds in gardens; one, which

mia, stamens and p

iz. ferns,

s (which

eeds), and

hose plants
of fructification on the back
In ferns the stalk or stipe.
the same; the middle rib of
ly a continuation of the foot-
nd leaf are all one; and stems
they have none. The ste
l, form a frond. Ferns grow
es. or near rills. Some hav
fronds, as the common hart's
drium vulgare); others, like the
pleris aquilina), which is used for

frond.

from

frond. Ferns are of a less su
most other plants. In trop
grow to the height of trees, an
arborescent or tree-ferns. T
species are used in New Zeala
tries as food, and some bitter s
as medicines; but, upon the w
useful tribe of plants, thoug
from the feathery appearance
present. There are about fift
many more in countries near t

The second order of Crypto
(*musci*); the learner will not
described to him. He knows
plants which cover the stems
den walls, or with their soft s

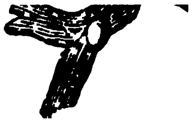
penetrate the crevices of rocks or
ees, while they require little nou-
e plant or soil on which they grow.
rious to other vegetables. They
iment from the rain, the dew, or
hey are most common in tempe-
imates, and when found in hot
lourish chiefly in shady places.
l of cells. Their cellular texture
resist drought, since the cells
sture, and retain it long; and
withered by the long Summer's
ain will again revive their beauty
hour. There are many species
ll not be able to detect them.
some progress in practical
not useful as food or medicine,

counties is used by the poor ins mosses grow by the sides of s boggy ground; and in course o fill up the place which was on water. The quantity of moistu roots, and those of other pla form the vegetable mould calle

The third order consists of t ticæ). Liverworts are difficult are not so common as ferns a are something between a moss late years, they were classed wi mosses, they are full of cells, revive by the application of m

Order four; flags (*algæ*).

base, a few [illegible]
weeds which we pick up by
wn country, are of a beautiful
yellow, or green; and in the
they are of a rich purple, green
ger and more numerous. Some-
such quantities on the waters
not pass among their tangled
y, as the orchil, are used in dying.
potash or soda, which is valuable
manufactures, and some of them
a jelly and eaten. The most com-
one which is known to most children.
rown kind, which has a number of
it. This is the sea oak or bladder
esiculosus). It hangs in profusion
and baths at the coast, and is often



SEA OAK.

which float in fresh water, a termed confervæ. The learn those crust-like substances of colour, which grow on rocks the bright orange or lemon-coloured patches, which are on old pales or gates, or on the roofs of houses. These are another division of flags, and are termed lichens. The pretty plant which grows in groups on

e mushrooms (*fungi*). This
y the eatable mushroom, (*aga-*
e poisonous plants commonly
hich, with beautiful spots and
few hours. It comprises also
ng spots which cover any de-
as well as the bright handsome
re found on old wood. A num-
s tribe are so minute, that they
by a magnifying glass; but they
ing animal or vegetable matter.
sters in damp cellars. The mush-
be known from the other fungus-
Look at the common mushroom
pestris), which is used for making
nder the cap (*pileus*)

How
names o
Ment
respect
How
Me
wells.
M
H
W
N
I

QUESTIONS

How many orders has class I
names of the orders need not be

Mention a plant in this cla
respecting it.

How many orders has class I

Mention some circumstances r
wells.

Mention some garden plants :

How many orders has class 1

What large tribe of plants is

Mention some uses of grasses

Describe their general appear

Mention several other plants :

ble in the sweet woodruff?
ild shrub which in May bears
flowers, each flower with four
stamens, and with red twigs and

rders has Pentandria?
a a large class?
eral plants in this class.
ere peculiar in the colours of the
ngwort?
ther plants with this peculiarity.
ribe of plants does the potato belong
several uses of plants in this class.
nbelliferous plants.
belliferous plants poison-

Of
Is
order
M
M
I

Of what use is sorrel?

Is Class Seven a large

orders has it?

Mention a wild flower in t

Mention some circumsta

horse chesnut.

How many orders has Oct

Mention an interesting t

here.

Where do the exotic heat

Describe the herb Paris.

What is that common flo

of musk in the evening?

Mention a circumstance r

the garden nasturtium.

specting the papilionaceous flowers

circumstances respecting pinks.
name of London Pride given to

ircumstances respecting the blad-

ant.
ircumstances respecting the lych-
its familiar name.
other plants of this class.
rs has class Dodecandria?
on garden flower placed in it.
e wild mignionette?
n once attached to the house-

Mention several common plar
tribe?

How many orders has Polyaı

Are the plants here similar
those of class Icosandria?

Mention some circumstanc
poppy.

Name some other plants of t

Mention some circumstanc
monkshood.

How may we know the pla
namia?

How many orders has it?

What is the first order, and

What is the second order, aı

Mention some flowers in bot

lowers in this class.

re are the flowers in class Tetra-

ders has Monadelphia?

e flowers it contains?

ircumstance respecting the marsh-

nalva sylvestris?

name of the pot geraniums, and

ome?

ers has class Diadelphia?

useful plants contained in it.

eterious ones.

ers has Polyadelphia?

plies us with chocolate?

ircumstances respecting the St

What is said respecting the o
of hot countries?

On what kind of soil do w
plants?

How many orders has class

What useful exotic plant is f

Mention several British pl
tains.

How many orders has class

What is said of the yew tree

Mention several plants in th

What is said of the mistleto

How many orders has Poly

Mention a wild plant in it.

In what respect does the clas
from all the other classes?

on one.

ctification generally found?

scent ferns, and where are they

use?

ere in Great Britain?

?

eir roots?

re they chiefly found?

ey?

how is it found?

ts?

ags called which float on the

culars respecting them.

sea-weeds of the Tropics?

-weeds?

W

Ho

the ot

Wha

How

the other kinds of fungi?

What are the gills?

How many kinds of mush

Britain?

ly found?

und?

hich float

cting them

f the Tropi

; ASCENDING SAP; DESCENDING
IFE; TRANSPIRATION OF PLANTS;
; GUM; MUCILAGE; RESIN; OILS;
NARCOTIC PRINCIPLE; PUNGENT
LES; ACIDS; SUGAR; STARCH; CO-
WAX; CAMPHOR; CAOUTCHOUC;
RTHS; FLINT.

mmon to all plants, called sap, has
l times alluded to in the preceding
s a watery juice, which is absorbed
by the root, and from the atmo-
leaves, for the purpose of giving
to the whole vegetable. It is com-
o be the blood of plants, for by it they
ed, and from this juice all the other
productions, as sugar, milk, or acid, are
a wound be made in a plant either by
ionally, the sap may be seen to

folded on the tree; and in Autu
freely after a frost, but during
be procured from plants.

One circumstance, which at
plants from minerals or other li
entitles them to be considered
life, is that of the ascent and
through their vessels. The s
root, up the woody stem of a tr
that part which has been des
wood; and in herbs, which hav
it ascends through the bundles
which form the woody part of t

The sap is in motion more
whole year, but especially duri
Autumnal seasons. In the

sses are verdant and beautiful, and
; and the Christmas rose, and the
and the laurustinus, bloom in our
r us, though scarcely a wild flower
and nature generally presents a
on.

h difference in the quantity of sap
ent plants. Some trees produce a
s the common birch (*betula alba*)
amental a tree in our woodlands.
be made in it, yield it in such
he Highlanders make birch wine
d the common grape vine (*vitis*
a branch be cut through it
about a pint of sap in twenty-

d that the sap ascends into the

w
m
tai
bet
the
a th
out
after
when
light
effect
kinds
atmos
watery
and no
of ves
The

rdant
Christmas
urustinus,
h scarcely
e generally
e in the
Some trees
non birch
tree in our
in it, yield
nders make
mon grape
be cut
int of sap
sap ascends

---

most, we cannot distinguish it.
tained by many experiments.
been often tried, is that of cuttir
the tree, and covering the part w
a thick gum, so as to prevent an
out of it. On weighing this b
after, it has been found to be le
when first cut, and therefore it
lighter by means of perspiration.
effected in the sap, is that caus
kinds of gas which vegetables
atmosphere. The fluid having
watery nature, contains more n
and now descends into the plan
of vessels from those by which i

The descending sap is calle

If the stem be broken
he plant, and it is of an acrid
to cure warts. This is the de-
proper juice, of the spurge. If
w stem of the dandelion, we see
ilk round the broken part, this is
f the dandelion: and the orange-
the yellow celandine (*chelidonium*
resinous juice of the pine and fir
he proper juices of the respective

eader may ask how it is that the
it receives its first impulse. This
hich has interested naturalists, and
genious experiments. Little more
n it, than that the sap is influenced
y the principle of life. When a

The
someti
drops
genera

The perspiration or transpira
sometimes be seen on warm ca
drops on the poplar, willow, or
generally merely water, like de
often mistaken; but sometime
sweet nature as on the leaf of t
sometimes, as on the leaves of
of a waxy substance. At sunr
water may be seen hanging, lik
of the slender leaves of the w
perspiration of the plant. It ro
part of the day, and mingled w
of vapour; but the coldness o
into drops, which will again m
shine. A great German nat
prove that these drops were th

eached it in its prison.
lants is much greater during a
an during cold or moist weather,
quantity during the chill airs of

ecretions of plants, as gum, sugar,
n valuable to man as food and
s substances by which he is en-
te art and science, and to manu-
seful articles. A few of these
mmonly present themselves to the
vegetable kingdom, may be here
d may lead the young botanist to
tion and inquiry.
most common vegetable products is
ed not be very particularly described
ho has been used to a garden, has

making ink, in dying, in calico
many domestic purposes, that t
who have not used it. It is alsc
cine. There are several varieti
gum arabic, the gum senegal, th
and the common cherry-tree gı
former are obtained from differe
The gum arabic flows in quanti
vera, a tree which is found in a
and lends its shadow to the hot
of that country. The gum oo
from its branches, and is gather
importation into Europe. Long
England, it may be heard in the
ing a crackling noise, as it

plants,
the kinds of mallow it is abun-
mon mallow (*malva sylvestris*),
very way side, to the marsh
icinalis), which, with its velvet
blossoms, grows on marshy
r plant affords a great quantity
able to the medical practitioner.
continent, made into lozenges.
Iceland moss (*cetraria Islandica*)
this mucilage, as do also several
his plant is used in England to
invalids; and the poor Icelander
s off this simple fare, with humble
de, thanking God, who, as he says,
l to grow for him out of the very

ubstances oozing from trees, and

painting, is an example of a gun from incisions made in the bark in Hindostan. This tree, the *ga* bears the fruit well known in gosteen, which is considered eq the pine-apple, and partakes of strawberry and the grape. Th is highly ornamental to the I during its flowering season, and fruitage; for its blossoms resem and its fruits are as large as an American species of St. Jol gamboge little inferior to the ki by the mangosteen. The myr to in Scripture, and which is sti East for embalming the dea

so much relished by the natives of
they call it "the food of the gods."
Balm of Gilead, praised in the
for its odours, and still prized in
cripture History, is a gum-resin
ance in the buds of the shrub amyris
he Turks so value this gum, that
r, prohibiting its exportation into
But better known than any of
stances, is a gum-resin which we
Summer day. This is the rich
on the plum, and which is, like
wder that lies on several leaves

s of much value in the arts, and
o all by the name of turpentine.
&c. exudes from various species

appalling kind sometimes take woods. These fires are occasio carelessness of travellers, who l a pipe, but they are often cause

Linnæus, in his "Tour of striking description of a fire of witnessed. "Several days ag brated botanist, "the forests h by lightning, and the flames rag great violence, owing to the dro In many different places, perh that came under my notice, t tended several miles in distan space, three quarters of a mil was entirely burnt; so that F

inguished in most of the spots we
in dry trunks of trees. After we
out half a quarter of a mile across
enes of desolation, the wind began
ther more force than it had done.
dden noise arose in the half burnt
can only compare to what may be
g a large army, attacked by an
ew not whither to turn our steps.
d not suffer us to remain where we
we turn back. It seemed best to
in hopes of speedily reaching the
wood, but in this we were dis-
an as fast as we could, in order to
ed by the falling trees, some of
us every minute. Sometimes
e trunk was so sudden that we

were not a little rejoiced when
ture terminated, for we had fe
a couple of outlaws, in momenta

Nearly akin to the resinous
are the substances which com
odours which form so great
and herbage. These perfumes
oils, and when distilled from va
rose, the lavender and others
essences, which we call lavende
&c. They are decidedly of
Though found chiefly in the f
yet they sometimes exist in t
rosemary, the myrtle, and swe
they are found in the bark, a
and some few roots are of an

oils, in common use, are of [illegible]
procured by expressing almonds,
or of other vegetables.
plants yield bitter, pungent, nar-
principles, highly valuable to the
some of them, agreeable to the
nmon hop (*humulus lupulus*) may
affording a bitter principle in very
he bitter resides in its fragrant
nes. This plant, though some-
ld in our hedges, is scarcely indi-
, nor was it generally cultivated
Kent and Surrey, until after the
II. When it was first introduced
reatly opposed, and the city of
parliament against the "two
wcastle coals and hops; the

The yellow gentian (*gen*
on the Alpine mountain
medicinal bitter used i
covers large tracts of g
Germany, and cattle l
touched on account of
wood sage of our hedge
extremely bitter, and a
pastures produces a l
almost equal in effica
the red centaury (*eryt*
common plant, with r
soms, which close bef
July day are shut up

The pungent prin
plant, which is amo

yellow biting stonecrop (*sedum acre*)
quent on walls. When a plant posse
ng flavour, which remains long on th
l is of a stimulating quality, its p
ned acrid. Of this kind are the various
tercup, which will, if bitten, blister th
the common arum, or lords and ladie
ally called. This plant, the arum m
very frequent under English hedges
nerly employed to make starch, but it
hands of those who used it. The
se pages once saw the mouth of a c
y inflamed and blistered state, from
ted the acrid juice of the arum; and
d irritation caused by it could not be all
veral hours.

Several plants produce juices which can

(*lactuca*), especially when grov
milky fluid, often employed as
persons eat the lettuce at nigl
sleep. Pope says of it,

> For wan
> Lettuce and cowslip wine]

The milk in the lettuce is ver
the plant received its Latin
milk. The medical properties (
are similar to those of opium, :
a safer remedy, and often adu
which opium could not be empl
by making incisions in the pl
of flowering, and scraping off
flows from the apertures, and

ed the Scots, fell victims to its
Scots had engaged to supply the
nk, and they mixed the berries of
vith the liquor that they furnished;
at a heavy sleep would soon over-
drank of it. A few short hours
whole army were in a deep slum-
eady prey to their enemies. The
lis), the henbane (*hyoscyamus*),
r plants might be named as pro-
n moderately taken, and death, if
antities.

of acids, known by various names
alic acid, malic acid, and prussic
by vegetables. We have all
l in unripe fruits; the green
e green apple are familiar in-

d engaged in

they mixed th

iquor that the

ry sleep would

it. A few

ny were in a

to their ex

ıenbane (hy

ght be nam

y taken, an

wn by vari

lic acid, an

les. We

fruits; th

le are fam

rifera).

ble product found in the roots the potato. Several kinds of undance; the bulbous root of up contains it; and so do also plants, as wheat, peas, beans,

.

is substances which plants fur- d manufactures, scarcely any han those which are extracted tanning and dying. The sub- which tanners use in preparing hiefly in the barks of trees in seeds or in young shoots l from the birch, the hazel, the veral other trees, is in common *ous* kinds are made from the

country, and forms a very pr
culture, but labour is there so n
in Great Britain, that it can be
at much less expense, and the B
not find it worth his attention.
plants, the dyer's woad (*isatis ti*
indigo in the excellent blue whic
it is occasionally cultivated in
England. With the dye of this
Britons painted their bodies. T
blue bottle (*centaurea cyanus*),
conspicuous a figure in the corn
rich bright blue of the colour of
colours are extracted from mac
rium), and from various lichens,
the walnut, alder, and other t

full yellow, or a pale nankeen
ld mignionette, or dyer's weed
which grows plentifully on chalky
nted in fields for its yellow dye;
, which, from its culture in Saffron
name to that town; the dyer's
nctoria), and many others, both
n plants, contain the yellow tint

der may be surprised to hear,
vegetable secretion is more com-
wax. We see on the upper
eaves, a kind of varnish, which
beauty of foliage, and which
m it by chemical process, is
vegetable wax. It is also col-
ers of flowers, and from the

gathered off. The candles emit
but as the berries are troublesom
animal tallow is not expensive, t
except by the poor people in who
the bushes grow, who use then
soap. The sweet gale, or bog
common in the Highlands of
Devonshire and some other co
yields an inferior kind of wax
wax.

Camphor is supplied to us ch
phor laurel (*laurus camphorat*
grows in Hindoostan and sever
This substance is, however, c
labiate plants, and in lavender,

o preserve
as insects will not come near it.
r caoutchouc, is a vegetable pro-
in our country, and it exudes, as
m several plants, as the Indian
it chiefly from South America,
ured from the *hævea caoutchouc*,
stica, and some other trees.
ubstance procured from the outer
es of oak, growing in France and
s the cork oak (*quercus tuber*). It
cork, nearly equal to this, exists in
ome other trees, especially in the
lish elm (*ulmus campestris*). This
ough common in our hedge rows, is
d indigenous, but is thought to have
of the crusaders from

on waste places and in corn
nuts or seeds, a large prop
plant is about a foot high, has
flowers, with broadly lanceola
on the under surfaces. The
hard, and like small pebble
broken by ordinary means.
plant is derived from two Gr
and " seed," on account of t
this part. The horsetail (*eq*
called shave grass and pewt
housewives in cleaning pewt
hard and flinty nature. Ger
in Queen Elizabeth's time, sa
plant wherewith fletchers a

QUES

AT is sap?

p found in all plants?

y is sap like the blood of animals?

at is meant by bleeding a plant?

en is the flow of sap greatest?

w does the sap rise in trees?

rough what part of herbs does it rise?

the sap in motion throughout the year?

hy should we infer that it is not motion

ter?

Mention some trees yielding a great qu

p.

What changes take place in the sap

the leaves?

proved that plants transpir

sunrise were not dew, but tr

When do plants transpire

Name a common vegetabl

Is gum wholesome?

Of what use is it?

Name some varieties of g

What is gum arabic?

What is mucilage?

Name some plants which

What are resins?

How do we distinguish re

What are gum resins?

What is gamboge?

Name some plants which

What is myrrh?

What is said of assafœtida

ciple is contained by the hop?

e circumstances respecting this plant.

e other well known bitters.

ıces of plants containing the pungent

ıe acrid principle? and name some

ing it.

ıarcotic?

ne plants in which the narcotic prin-

ne of the various kinds of acid.

·al instances of plants containing

ıd in many vegetables?

ts may we find starch?

plants in which tannin may be

ained by the

ices respecting

known bitter

s containing the

ciple? and

which the

ious kinds of

of plants

egetables?

id starch?

which tannin

What is said of vegetal

Name a plant in which

Whence do we procure

Do any other plants p

Name some of its uses.

Whence do we procure

What is cork, and whe

Name an English tree

Name some other subs

What is said of the c

What is said of the p

F PLANTS:—EFFECTS OF CLIMA ›DUCTIONS; PLANTS OF VARIOUS COUNTRIES, NT HEMISPHERES.

ll have observed that different plants
iar to different places, and that we
hem all in any rural spot. Thus if
d primroses or lilies of the valley,
limb to the top of a sunny hill to
; or if we wanted the briar rose,
o to the sands on the sea shore to
large number of our wild flowers,
d dandelion, are found in hedges,
ls, in valleys, and in almost every
ritish landscape.

, however, grow chiefly in certain
f they happen to rear their heads
ve should not expect to find them,
ing than when blooming under

at differen
aces, and th
ral spot. Th
ilies of the
of a sunny
ted the bri
on the sea
of our wild
re found in
and in almost
e.
ow chiefly in
to rear their
expect to find
hen blooming

require the presence of moi
neighbourhood, and wave
blow over the streams.
wild water valerian, and
the odorous and gracef
the gray willow, and the
side has its peculiar plan
in number; but the sampl
and the Michaelmas dais
lane, are never seen but
the tamarisk and sea hol
native places at the coast,
to ornament our inland
Sea-weeds have their
bottom of the ocean, or
which arise from it, or

he azaleas and rhododendrons.
lds have their own gay ornaments,
nd the poppy and the corn-cockle;
et, or the wood anemone, gladden
es or the copses. The gay meadow,
shines in fullest power, is bright
. The ivy grows against the wall
and the moss makes the old stone
h its verdure. A few plants in-
res into rocks and walls, and, like
nd the houseleek, flourish on a
rambles, honeysuckles, and wild
kinds, twine about hedges and
rasitic plants, like the mistletoe,
juices of larger vegetables. We
es in our country, but in warm
numerous and luxuriant.

climates. We do not howe

the same appearance which

own lands. Some are impro

but by far the larger numb

brilliance and odour by thei

Tropical countries vegetatic

and magnificent appearan

brighter, the odours more

are gigantic in height, while

with thousands of flowers.

high mountains in those ho

of equal value, as the maiz

the banana, the sugar can

there. Coffee, spices, and

the orange and citron, be

The forests are full of

e pine and fir tribe are peculiar to
n the Equator, or to very elevated
generally said, that plants are simi-
ries in the same degree of latitude;
remembered, that elevation above
e same effects on vegetation, as
e Equator. In both cases, we may
nt where the snow never melts,
ation ceases. In both cases, plants
d and few, as we reach the regions
w. The palm trees, the tree ferns,
grasses, form the striking features
tation, and present an appearance
to that which it exhibits in the
der regions of the globe; while as
rds the poles, trees become fewer
osses and lichens become nume-

d fir trees

uator, or to very

said, that plants

same degree of

red, that elevation

effects on vegetation

r. In both cases,

the snow never

es. In both cases,

as we reach the

alm trees, the tree

rm the striking

present an

ich it exhibits

of the globe;

es, trees become

lichens become

latitude. Thus the cact
hemisphere, and the bea
Many islands also hav
selves, and which are n

QUE

MENTION some pl
spots.

Mention some aqu
by streams.

Name some plants

Will any of these g

Where do sea-wee

wers exo
oes Tropical vegeta

pensate to the inhabitants of the
ant of wheat?
s meadows in Tropical lands?
ns are palm trees found?
stance affects vegetation in the
ce of latitude?
do plants near the poles rese
ted regions?
ts give the most striking app
vegetation?
nts are most numerous near t
said of the dwarf birch and w
e plants of the eastern hemis
the west?
plants found o

o the inhabitants of t

eat?

in Tropical lands?

trees found?

vegetation in the

?

r the poles re

striking appear

ous near the p

ch and willow

hemisphere

d on islands?

AS this book is in
necessary here
though they appear v
botanist, sometimes per
are the words Genus, S
A genus includes a n
each other in their most
comprehends those allie
numerous resemblances.
the genus rose; all viol
There are, however, seve
briar-rose, the damask-ro
Each of these kinds is a d
there are several kinds
scented violet, the dog vio

[t is not a constant feature of the
ıerefore term a plant so differing, a
:ies, and not another species. Thus
violet is not a distinct species from
et violet. The flower is exactly
its structure and its nature, and,
from it in colour, is but a white
mmon sweet violet.

endeavour to guide the learner to
ra, or book by which he will dis-
of those flowers he may find in
. If he should however happen
who is a botanist, it would be
assistance on this point; as a few
instruction would render the use
easy than a written direction can
3ritish Floras by several good

When the learner has
must first find its class an
its stamens and pistils. W
wished to know the name
volvulus, or bindweed, whi
of almost every English lan
ing the flower, he would fin
stamens and one pistil; an
it to class Pentandria, or
turning to that class and
would find a number of dif
of that class and order; an
hand, he must compare it w
each genus, until he sees
This seems much to do,
there are so many flowers,

nvolvulus is thus:

rior, of one leaf, small, divided into
d permanent segments. Corolla of
ge, bell-shaped, regular, with five
shallow lobes: nectary and gland
en. Filaments awl-shaped, half as
olla. Anthers arrow-shaped, erect,
nen roundish. Style thread-shaped,
stamens; stigmas two, spreading;
sh. Seeds large and roundish.
nvolvo to entwine."

t and minute description, of course
genus convolvulus; and now, in
what *species* he has gathered, the
ark the number attached to the
a few pages further in the book
nding number. Here he finds

ls:
f, small, divided
gments. Coroll
l, regular, with
: nectary and
ts awl-shaped,
s arrow-shaped,
. Style thread-
igmas two, sprea
large and roun
twine."
e description, of
volvulus; and
he has gathered
mber attached
es further in the
Here he

single flower;
flower; roots lo
feet long; flow
colour. Perer
grows in hedg

As soon as
(which he wil
to begin to for
collection is ca
In preservin
retain, as m
form which
plants may b
books; but
plan, to proc
and to place

out his plants to dry. If a large
er be used, so as that two or three
ween each specimen, the plants will
moving; but if a small quantity of
employed, the plants must occasion-
out, while the paper is thoroughly
e.

must not be disappointed if some
lose their colour. Few of them,
heir natural brilliance of tint, even
th the greatest care, and several
bly turn black in drying. This is
he common yellow cow-wheat, the
he red bartsia, and most of the

lants have been well dried, they
laced on paper, to form the her-

y.

t two or th

the plants

all quantity

most occa

r is thoro

pointed if

Few of th

ice of tim

re, and sev

lrying. Th

cow-wheat

nd most of

well dried,

o form the

top of each plant should l
order; and beneath, its scien
the place where it was fo
was gathered, and any othe
it, which the botanist would

Dried plants are often n
which had laid their eggs i
are hatched in the herbar
be kept in a damp place, it
preserved; and even when
requires frequent opening.
the incursions of insects b
with poisonous liquid; but
ness with this preparation
is not right to recommend i

variety differ from a species?

THE END.

WHITTINGHAM, CHISWICK.